GOVERNMENT OF ORISSA

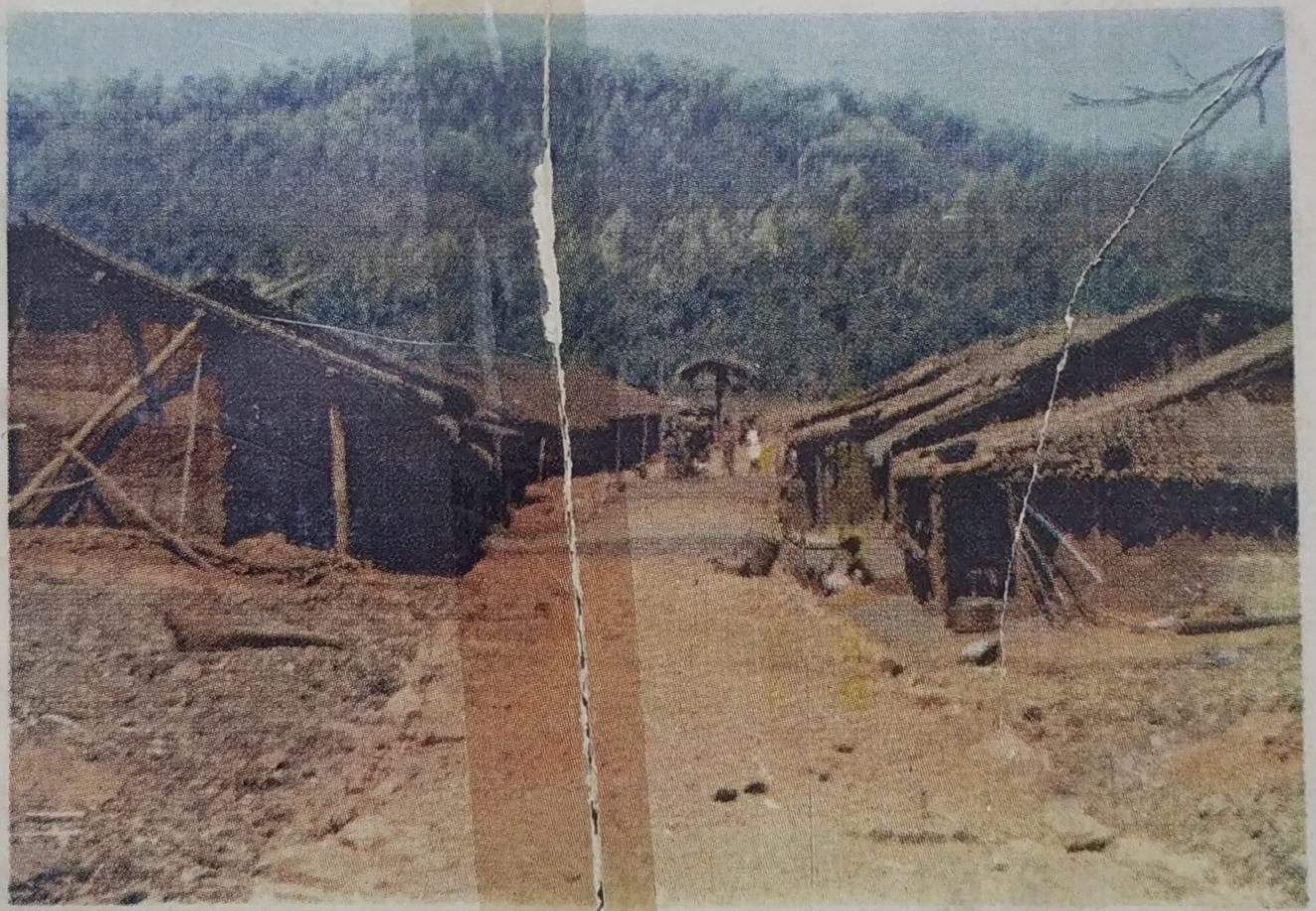
WELFARE DEPARTMENT

DEVELOPMENT HAND BOOK

FOR THE

KUTIA KANDHA OF K. K. D. A., BELGHAR PHULBANI DISTRICT

(AN ACTION PLAN BASED ON TECHNO-ECONOMIC SURVEY)



SCHEDULED CASTES AND SCHEDULED TRIBES RESEARCH AND TRAINING INSTITUTE, BHUBANESWAR-751003

DEVELOPMENT HAND BOOK
FOR THE
KUTIA KANDHA OF K. K. D. A., BELGHAR
PHULBANI DISTRICT

(AN ACTION PLAN BASED ON TECHNO-ECONOMIC SURVEY)

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Partial View of a Kutia Kandha Village

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Bhubaneswar

Dated the 12th July 1994

FOREWORD

The Development of Primitive Tribal Groups (P.T.Gs.) has received special attention of Government since the Fifth Plan period resulting in the emergence of micro-project strategy. The Central Government provided funds under Special Central Assistance for the implementation of various development programmes by State Government. In our State as many as 12 P.T.Gs. have been identified and 16 micro-projects are now in operation. Each P.T.G. is unique in its socio-economic and cultural aspects, lifestyle, needs and aspirations and also in the ecological setting. It was, therefore, decided to formulate action plan based on techno-economic survey for each P.T.G. with the expertise of technical experts, known as Project Consultants from various sectors in collaboration with the Director and Research Staff of THRTI. The principal objective of such an exercise was aimed at formulation of action plan for sustainable development within a specific time frame through utilisation of both natural resources and human resources, keeping in view their present level of development.

The present volume which is first in the series is devoted to the Kutia Kandha, a primitive tribal group inhabiting Belghar area of Phulbani (Kondhmal) district. The action plan for their development highlights location, specific programmes based on the felt-needs of the people and utilisation of local resources available. A well-thought out multi-sectoral and holistic package of development programmes with agriculture and horticulture as the core have been suggested for their all-round development which may ultimately boost confidence among them to stand on their own and promote self-sustenance.

It is hoped that this book will be of immense use for scholars and all those who are associated with the development of the Kutia Kandha and similar other primitive tribal groups. In addition, it will serve as a source book while formulating annual action plan for implementation.

(M. K. PURKAIT)

PREFACE

The present volume is but a part of a grand scheme contemplated by a committed development practitioner/administrator who cherished to bring to limelight through an interdisciplinary approach the significant dimensions of our post-independence development efforts, exercise and experience among the most vulnerable and weakest section of the tribal communities in our State and to prepare blue print of action plans for their development with the collaboration of technical experts, Implementors of development programmes and the intended beneficiaries. Besides the theoretical and academic aspects of conceptualising development intervention there is need for rethinking practical strategies for implementing planned development programmes among the Primitive Tribal Groups (P.T.Gs.) who face enormous socio-economic problems creating stumling blocks in the development path. A series of publications under the common title of Development Hand Book was intended humbly to overcome the impasse in evolving a development pradigm and to accept an appropriate strategy in consonance with the felt-needs of the intended beneficiaries. Shri R. M. Senapati, I. A. S., former Commissioner-*cum*-Secretary to Government of Orissa, Harijan and Tribal Welfare Department not only steered the studies, reviewed the progress from time to time but also took keen interest and initiative in unravelling the multisectoral and sustainable development efforts more comprehensively and realistically. The basic idea was to formulate an action plan based on techno-economic survey among the people in the area over a period of time during which they would stand on their own, develop self-sustenance and derive strength to combat against abject poverty, illiteracy, hunger and mal-nutrition, social injustice and discrimination, exploitation and the like.

The study is the outcome of a group endeavour inculcated with a spirit of dedication for doing something tangible for those who are deprived, disadvantaged and discriminated. The intellectual articulations of nine Project Consultants, the Director and the research staff of the Institute represent various disciplines, such as Social Anthropology, Economics, Statistics, Geography, Forestry, Soil Conservation, Agriculture, Horticulture, Veterinary and Animal Husbandry, Education, Health, Public Health and Sanitation, Communication, Irrigation, etc. Although the package is multi-sectoral the approach is holistic with the goal-orientation of providing feasible, viable and sustainable development alternatives. The book has both academic and operational aspects.

The Kutia Kandha is one of the 12 Primitive Tribal Groups identified in Orissa State. Their ecology, economy and society manifest unique characteristic features requiring special treatment for socio-economic development. The study encompasses their resources management both human and natural; indigenous techno-economic base and skills; socio-structural arrangement and explores scope for the enhancement of the quality of environment, resources mobilisation, and ultimately the enrichment of the quality of life.

We hope, the book will be useful in focussing aspects concerning human development-oriented research besides its application in the operational context.

(K. K. MOHANTI)
Editor & Director

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The present volume was prepared under the stewardship and unstinted co-operation of Shri R. M. Senapati, I. A. S., Former Commissioner-*cum*-Secretary to Government of Orissa, Harijan and Tribal Welfare Department and we offer our sincerest gratitude to him.

We are deeply indebted to Shri M. K. Purkait, I. A. S., Commissioner-*cum*-Secretary to Government of Orissa, Harijan Welfare and Tribal Welfare Department for writing Foreword to this volume.

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1. Shri R. Mishra, Conservator of Forests (Retd.)	..	Forest
2. Shri D. Sahoo, Joint Director, Soil Conservation (Retd.)	..	Soil Conservation
3. Shri R. N. Mishra, Deputy Director, Agriculture (Retd.)	..	Agriculture
4. Dr. B. Mallik, Director of Horticulture (Retd.)	..	Horticulture
5. Er. N. B. Sarangi, Executive Engineer (Retd.)	..	Irrigation
6. Dr. S. P. Kar, Deputy Director Veterinary & A. H. (Retd.)		Animal Husbandry
7. Dr. T. N. Pani, Joint Director of Health Services (Retd.)	..	Health
8. Er. S. K. Basak, Superintending Engineer (Retd.)	..	Public Health & Sanitation, Communication.
9. Dr. P. C. Rout, Director, Elementary Education (Retd.)	..	Education

We sincerely thank our colleagues Shri B. Chowdhury, Deputy Director, Dr. M. Champati, Deputy Director, Dr. A. C. Sahoo, Officer on Special Duty who have prepared write up for various sections and helped us in several ways.

We are thankful to Shri J. P. Rout, Research Officer and Shri S. C. Biswal, Statistician who have rendered necessary help in preparing the present volume. Shri B. B. Sahu, Research Assistant, Shri B. C. Sahu, Primary Investigator, Shri R. N. Purohit, Primary Investigator and Shri D. K, Mishra, Research Investigator (Temporary) and Shri L. K. Panda, Research Investigator (Temporary) have rendered necessary assistance as supporting staff and thanks due them.

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(K. K. MOHANTI)
Editor & Director

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Map of Kutia Kandha Development Agency

CHAPTER I

INTRODUCTION

1·1. During the Fifth Five-Year Plan period a decision was taken at the national level to identify primitive tribal groups as special category for their overall development by bringing them under the coverage of special programmes. While defining the primitive tribal groups the features, such as pre-agricultural level of technology, low literacy rate, diminishing or near stagnant population, seclusion, archaic mode of living, etc., were taken into consideration as diagnostic criteria. On the basis of such criteria, in Orissa State, as many as 12 tribal communities were identified and for their development 15 Development Agencies, commonly referred to as 'Micro Project' are now in operation. Various development programmes are implemented at different tribal pockets of the State. In course of monitoring, review and evaluation of development programmes implemented through these Agencies, it was noticed that there has been progress to some extent in the development programmes so far implemented. But the efforts already made require perpetuation and further strengthening in order to bring sustainable development for the people within a time frame. It was thus, felt necessary to prepare Handbooks on Development based on Techno-economic Survey and Action Plan formulation with the collaboration of Project Consultants having specialization, experience and expertise in various sectors. The purpose of such a study was to gain insight into the problems faced by the people in the area and to formulate need-based programmes for their allround development.

The present exercise which is an innovative inter-disciplinary approach, in a limited scale, incorporates collaborative efforts of social Anthropologists, Economist, Statistician, Geographer and Project Consultants from various disciplines, like Soil Conservation, Agriculture, Horticulture, Irrigation, Forestry, Veterinary and Animal Husbandry, Health, Public Health, Communication and Education. It precisely aims at an integrated effort to evolve and formulate a package of development programmes in an area of interest. The area here in this context means the Kutia Kandha, a sub-tribe of the Kandha tribal community, living in the micro-project area styled as the Kutia Kandha Development Agency (K. K. D. A.), Belghar within the jurisdiction of the Balliguda Integrated Tribal Development Agency in Phulbani district. The study is not merely an assemblage of facts and figures but a holistic and integrated one. Such studies rightly necessitate multi-disciplinary approach with a coordinating master social science discipline as development is people-centred and meant primarily for the people. There cannot be any development without comprehensive and total understanding of human society and culture. Moreover, economic development and social development are complementary concepts. In a planned development intervention the stories of success become rare because we do not adequately realise the relevance of society and culture. Improvement to the existing technologies or introduction of new tachnologies for development does not work unless they are in consonance with the ecological viability and cultural capabilities of the people for whom we formulate action plans for implementation.

If the desired goal is the upliftment of the weaker sections of communities there is every relevance for action plan formulation in order to implement development programmes successfully. Action planning, both a concept and a method, form the core and significant component of planned development intervention. It has a conceptual orientation as it carries with it the fundamental ethos, ideology and objectives of national planning. It incorporates the methodological perspective as it is translated into practice in the area of operation. In the context of planned development action planning with more precise and practical aspects provides the direction, strategy and mode to go ahead with the project implementation. Action planning is primarily area-based and it emanates two broad aspects, such as, the ethnic base and the environmental niche, since the

quality of human life and the quality of environment, are intrinsically inter-related with each other. Moreover, the action planning is desired to be worked out with a view to reinforcing the environment and to revitalising the institutional framework of the society. Since development is viewed from holistic perspectives and the process involves sector-wise approach, each sector while operating independently would be required to maintain linkages with other sectors for integrated efforts.

Each sector has its unique characteristic features and together they form formidable parts of the entire development process-induced or planned. The operational network, besides putting emphasis on a specific sector is bound to look forward to the people, their social organisation, value system, ethos and ideologies, world-view, socio-cultural patterns and needs, dynamics or politico-jural pattern and leadership and the like, as they are extremely relevant in the development niche. The planner and policy-makers, administrators, social scientists and technocrats and intended beneficiaries of development programmes would very much realise that the development approach itself is uniquely people-centred. The various facets, like administrative, financial and technical are to be co-ordinated and integrated in the context of development planning and implementation.

Land is essentially the predominant resource and top priority attention is necessary for agricultural development. Tribal people not only pay attention to land as a natural resource but also attach supernatural significance because of its association with several socio-cultural factors. For them, land or soil is not only the source of production but also provides the basic means of livelihood. Since many years soil erosion has become a concurrent issue particularly in the areas which are studded with undulating plateaus and mountainous tracts and are inhabited by tribal people. In order to increase the agricultural productivity introduction of comprehensive and suitable land use programmes in tribal areas is very much essential. While preparing programmes to protect the soil cover and its fertility, traditional technology adapted by the tribal communities since generations through their ageold experience, indigenous skills and established values associated with it are to be taken into consideration. They have their traditional pattern of land allotment, use, shaping, terracing, levelling and for arresting soil as measures of land reclamation and development by means of stone, contour-bunding and reclamation, etc. In most of the tribal regions the geomorphology is favourable for the introduction of terrace cultivation. In several tribal communities one can witness the special skill of the people in terrace cultivation. They prepare terraced fields on the hill slopes by making stone packed contour-bunding. Water management in different regions shows their indigenous skill and indepth knowledge for arresting surface soil and also reservation of water. By means of field channels and contour irrigation channels they irrigate terraced land by regulating flow of stream water in a systematic manner. In many areas it is seen that they have prevented soil erosion by the plantation of different varieties of plant species in various slopes. Therefore, the development practitioners and soil scientists should take due advantage of the indigenous technology, skill, interest and ingenuity of the tribal people for better effects.

It goes without saying that forests and tribal communities are inseparable. As denizens of mountains and forests the tribal way of life inculcates the spirits of forest because of their intrinsic inter-relationship. The socio-eco-system of tribes is incomprehensible without a thorough understanding of the reciprocity among them. In fact, it is often overemphasized that the tribal people are the destroyers of forests. But, indeed they are the preservers of forests from time immemorial as they themselves grew and developed in the lap of the forest. Therefore, any research concerned with afforestation programmes, in general and social forestry oriented schemes, in particular is bound to take cognizance of the socio-structural variables of the community concerned. The swidden cultivation practice through the application of slash and burn technique under rotation type appears to be alarming in certain areas as a

disruptive force acting against the vitality and vigour of the forest. But the triba people are not indiscriminate in their attitude and practice. They also preserve thei essential species of trees for their use. Moreover, it is the economic compulsion which necessitates adherence to this sort of economy. Unless and until viable economic alternatives are made available, the practice of swidden cultivation cannot be done away with. Therefore, keeping the basic subsistence in view, persistent efforts should be generated as compensatory measures, so that the practice of shifting cultivation would gradually cease to perpetuate. It is not merely the statistics collected regarding the enhancement or the decrease of area but under shifting cultivation which would bring a vicarious satisfaction or despondency to the development practitioners but real diagnosis of the felt-needs of the people really matter. It is not a fact that people are absolutely ignorant about the shrinkage of forest cover in their area, they require innovative modern techniques for better utilization and revitalisation. The socio-structural variables, like population growth/decline, ethnic homogeneity/heterogeneity, land use pattern, pre-agricultural/agricultural technology including social arrangement, inalienable labour component are other culturally conditioned human activities, etc., are essentially noteworthy while conceptualising forestry projects.

Whereas the developed nations have adopted scientific mechanisation of agriculture, the developing nations are pondering over to consolidate the existing indigenous skills and techniques practised by the people over years and to introduce modern technical knowhow which could be easily acceptable to them. In the field of agriculture or horticulture we are not only confronted with the problems of agronomy but also with the social structure of the agriculture and pre-agricultural stages of economy. The swidden cultivation as a pre-agricultural mode of technology although declared as pernicious for both man and the eco-system could not be thought to be stopped suddenly because of the dire necessity involving the basic survival of the people concerned. Therefore to conceptualise innovation of the agricultural technology in an area where the rudimentary practice is still in vogue is required to be more practical and utilitarian than a prescription for the sake of modernisation. In an area where the conservation of energy is low and limited as much as the technological, labour, capital and organisational components, keeping in view of the felt-needs of the people the remedial measures for eradicating the problems are to be suitably sorted out. For instance, information regarding the social organisation of the people for whom agricultural or horticultural development programmes are intended, is essential. In case we are ignorant of the kinship network operating in their society it would be difficult to comprehend the labour constraints, co-operation process, production decision, enterpreneurial skill, etc. The social analysis of the settlement is as crucial and essential as planning, implementation and management of agricultural or horticultural schemes.

Michael M. Cernea in the context of irrigation projects aptly emphasizes, " sociological issues embeded in the development and operation of irrigated system " and states, " The water flowing in irrigation systems is as much a social product of human organisation as it is a natural commodity " and further, " the indepth understanding of physical and agronomic problems of irrigation is impossible without the understanding of the surrounding social organisation " (1985 : 23). Coward identifies five nebulous tasks in irrigation systems, such as water acquisition, water allocation, system maintenance, resource mobilization and conflict management and all require understanding of human behaviour. While presenting an overview of the irrigation system in Philippines he further states, " A detailed analysis of what local people are already doing in a proposed project area may have value beyond its effect on specific design choices in that locale. There is the possibility that the accumulation of information on how much local people are doing and in some cases, how they are doing it, could influence policies regarding the appropriate mix of State and

community responsibilities and rights in irrigation development, knowledge more about what irrigation communities can do could influence our thinking about what they ought to do. " (In Cernea (ed) 1985 : 31-32,50).

Another feasible sector under integrated development which needs our attention is the livestock management. The population group which is require minimum material comforts should manage their livestock in such a manner so that the congenial upkeep of domesticated animals and protecting them against starvation, disease and pestilence are ensured. The people have their own indigenous knowledge and ingenuity for stock-raising through ageold experiences. They need new technological knowhow best suited to the existing environment, so that effective livestock development is assured in the area, characterised by eco-system dynamics. The technical expert in the field of Veterinary and Animal Husbandry is, therefore, supposed to prescribe a technical rationable befitting the socio-cultural matrix of the people concerned. While thinking about the population system the facts, such as labour intensivity, personal care and nourishment of the animals, group involvement, integrated efforts, etc., which are highly essential for livestock development are taken into consideration.

The tribal health-related developed programme has attracted the attention of various experts in the fields of health, nutrition, environment, demography, genetics and heredity, etc. The planners and the development practitioners are expected to be sensitive while formulating health and nutrition programmes in the underdeveloped tribal areas. While thinking of providing modern health facilities the indigenous beliefs and practices based on the tribal concept of disease and cure, sanitary habits including personal cleanliness are of paramount necessity. The switch over from the traditional practices to modern ones is desired to be gradual rather than sudden, moreover, the health workers equipped with modern health practices are required to be aware of the culture, society, and indigenous health habits of the people, so that socio-structural re-inforcement is positively ensured. The traditional medicine and the modern medical practices should march hand in hand within a given socio-cultural dimension of disease and its treatment with an approach of integration. Although medical anthropology and the sociology of medicine have a recent inroad into the crux of the tribal health problems, they have made outstanding progress in the context of tribal health programmes. In fitness of things if the traditional midwives, medicineman, magicians, etc., specialising in indigenous herbal medicines and other curative practices are imparted appropriate training in mordern health practices. It could be more acceptable to the community so that they would ensure effective medical aid than the futile efforts of any unwilling medical worker posted in the area creating an image of an alienated personnel non-conversant with the ethos, world views and ideologies of the people for whom the development interventions concerning health programmes are intended. The programme thus conceptualised would embrance the technocratic expertise and the indigenous expertise drawn together for the attainment of a common goal. A stunch believer in modern medicine might reject the indigenous beliefs and practices for a short while, but he would experience non-acceptance during his endeavour and ultimately accept them.

Education which inculcates new ideas and values also acts a catalyst in bringing forth transformation of tribal society. Any measure for development would certainly focus attention for educational development among the people but the problems connected with this sector, being multi-dimensional, require appropriate conceptualisation and implemention. In a tribal society people may be illiterate but they are not ignorant of the way of life and the things and events experienced by them throughout their life span. The process of enculturation/socialisation which starts from the very moment when the child is conceived inside the mother's womb acts as the thres hold for any educational technique introduced in the society subsequently. The planning for the

educational development pre-suppose the comprehension of the socio-cultural base of the people for whom the development is intended. The social institutions existing in the society through persistence and change are required to be understood by the development practitioners and in case of the necessity the institutions are to be reinforced and revitalised to suit to the present requirements. The sodalities and non-kinship organisations in tribal societies play pivotal role in the field of education. The problems connected with inadequate enrolement, eye-catching dropouts and disappointing success in the schooling system in the underdeveloped tribal pockets could be wiped out in case the educational inputs are channelised through the youth dormitories, community centres and the like. This would avoid the one-way traffic and create avenues for the inter-play of tradition and modernity. The problems faced in the field of the medium of instruction, availability of teaching materials and aids, course contents, periodicity of courses, etc., could be minimised to a large extent, thereby promoting the cause of education. This would further streamline the co-ordination among the teachers, pupils and parents which is essential to eradicate various bottlenecks in the field of education. If we at all need sincerely to break the inequalities in educational development we should put the people first while thinking of any type of education for a given society.

Since communication is one of the major parameters of development because of its linkages in ensuring infrastructural facilities, the road projects need peoples' participation. The activities connected with physical communication need information on the social organisation of the ethnic groups in an area. The types of roads and the modes of transport, are to be designed in consonance with the felt-needs of the people. It would be advisable, while applying technical skills for road construction to go for a social-cost and social-benefit analysis. A technical expert would be able to provide necessary guidance for implementation of the road projects keeping in view the base-line data on the social organisation of the people made available through social science research.

The nine eminent Project Consultants with their long experience and expertise visited several villages in the study area, came in direct contact with the people, collected basic information, observed the co-cultural setting of the area and had group discussions with the officers and staff in the micro-project and ITDA levels. Such discussions among the development practitioners and the Project Consultants, as experts in their respective sectors of development, further opened the arena of mutual perception and better comprehension of development situations of crucial import. In addition, the Project Consultants had several rounds of discussions collectively with the Commissioner-*cum*-Secretary to Government, Harijan & Tribal Welfare Department, the Director, THRTI and research staff actively associated with the study. Further, the Project Consultants visited the institute personally several times for discussion with the research staff and for library work. They made use of the data collected from the primary sources as per schedules specifically devised by them and processed in the institute with the supporting research staff. The outcome of their intellectual discussions were not only fruitful in determining the orientation of the present study but also in finally submitting their reports in respective sectors. As the study is a short-term research project, the Project Consultants got roughly 2 months duration in their assignments. Due to constraint of time and staff involvement, it was not possible to cover up all villages for detailed investigation in the micro project area. Therefore, primary data were collected from 10 per cent of villages selected through simple random sampling technique, although data from secondary sources for all villages were utilised for the study.

CHAPTER II

2·1. AREA AND POPULATION

The Area:

The Kutia Kandha Development Agency, Belghar started on the 24th July 1978 and covered 66 inhabited villages of Belghar and Gumma Grama Panchayats of Tumudibandh Development Block under Baliguda Revenue Subdivision in Phulbani district. It is located in the Western corner of the block touching boundaries of Koraput and Kalahandi districts and lies roughly between 19°45′ and 20°5′ N-Latitudes and between 83°30′ and 83°45′ E-Longitudes. The total geographical area is estimated to be around 300 Sq. Kms.

The K. K. D. A. area lies on the north-east fringe of the Eastern Ghats and consists of confused mass of wooded hills intersected by hill, rivers and streams and interspersed with small human habitats here and there. It is situated at about 2,500 ft. above sea level and has several hills with height of 300′. Two rivers, viz. Utei and Chauldhua have originated from this area. In addition to these, there are several perennial streams, like Bilamal and Dhudusi which run into Chauldhua and Utei rivers and ultimately merge with river Tel in Kalahandi district. The hills excluding the portions affected by shifting cultivation, are covered with forests of Northern tropical evergreen and deciduous type with predominant species, like Sal, Asan, Piasal, Jamu, Dhaura, Mango, etc. Among other trees and shrubs, Harida, Bahada, Anla, Sunari, Bamboo, Cane, thatching and broomstick grasses are common, Wild animals, like elephant, tiger, bear, wild pig, deer, wild dog, sambar, kutra and birds like peacocks, jungle fowl, etc. are seen.

Villages :

According to the K. K. D. A. source, there are at present 70 villages in the project area including 12 hamlets which have emerged out of the main villages in course of time but have been recorded as separate villages for the purpose of development activities. Out of 70 villages enlisted at present, there are two uninhabited villages, viz., Pukuru and Turli.

A comparison of the villages delineated for the Agency at the time of inception with the list of villages now maintained by the Agency (shown in Table 2) has revealed as follows :

(*a*) Previously 66 inhabited villages were enlisted as against 68 inhabited villages at present ;

(*b*) As many as six villages, viz. (1) Talangapadar, (2) Dahabali, (3) Adalangu, (4) Girisasa, (5) Muskasaru and (6) Paskadi now covered by the Agency were not included previously;

(*c*) Three villages, viz., (1) Dadangi, (2) Nuapadar, and (3) Pagerpadi (B) included earlier are not enlisted by the Agency at present.

Thus, it may be concluded that the list of villages covered by the Agency is constantly changing, mainly due to desertion of villages by the inhabitants and establishment of new villages (sometimes with a new names) in new sites and also shifting of some households from the original village and founding of a new settlement

with a new name. In this connection, it may be mentioned that several villages have hamlets besides the main village enlisted as separate village by the Agency for the purpose of development activities—

Village		Hamlet
(1) Rangaparu	..	(*i*) Semadaipadar
		(*ii*) Girisasa, and
		(*iii*) Mandamaska
(2) Kranjikana	..	Srambuli
(3) Bikapanga	...	Muchedpbaru
(4) Burlubaru	..	Madalkana
(5) Galebeda	..	Muskasaru
(6) Girlimaska	..	Gunusupa
(7) Bhaluguda	..	Sukerpadar
(8) Kinari	..	Mathaghati
(9) Deogada	..	Talangpadar
(10) Pukuru	..	Bariguda

No doubt, the Kutia Kandha prefer to live as a well-knitted cohesive group in a village where houses are generally built in one contiguous rows facing each other so that everybody can see each other. All households in a village bave a common fence with logs of wood planted. Further the population size of the Kutia Kandha village when taken into consideration will strengthen the above observation.

Out of 68 inhabited villages in the Agency, population figures in respect of seven villages (Sindhibali, Jamuguda, Tulangapadi, Kanibhata, Dahabali, Adalangu and Pukuru-Guma colony) are not available in Census, 1981. Moreover, population figures of 12 habitations/hamlets enlisted as separate villages by the Agency are also not given separately but might have been shown against their respective main villages. Thus, villagewise population figures in respect of 49 villages including their hamlets which are available during 1981 Census is shown in Table-2·2. A classification of these villages according to population size given below shows that the majority of the villages are very small.

Population size		No. of villages	Percentage
(1)		(2)	(3)
(*a*) Up to 50 persons	..	11	22·45
(*b*) 51—100 persons	..	24	48·98
(*c*) 101—150 persons	..	11	22·45
(*d*) 151—200 persons	..	2	4·08
(*e*) 201—300 persons	..	..	..
(*f*) Above 300 persons	..	1	2·04

Of all villages, Paskadi having 4 persons is the smallest and Rangaparu with 337 is the biggest in the Agency. Average population per village comes to about 82 (81·69) persons. In five villages, viz., Dupi, Kalanguda, Bhalnguda, Deogada and Burlubaru, only 8 persons belong to the category 'Others'. As many as 12 villages, viz., (1) Pringel, (2) Sipidikhole, (3) Bhandar Sala, (4) Gambhari, (5) Sanatuakela, (6) Badakumudi, (7) Sadangi, (8) Saperibhata, (9) Mundimaska, (10) Ambidikhole, (11) Kranji Kana (Srambuli), (12) Paskadi are exclusively inhabited by tribal people and the rest 32 villages have both tribal and Scheduled Caste population.

The villages covered by the K. K. D. A. contain ten villages as shown in Table 2·3 which have no Kutia Kandha population. In six of these villages there are people belonging to the Gond tribe and the rest four are non-tribal villages. The average population per village comes to 204 persons, which is more than the double in the Kutia Kandha villages. There are two villages (Silkudi and Guibali) having no Scheduled Tribe and Scheduled Caste population.

Population :

The total population of the 49 villages including 11 hamlets according to 1981, as shown in Table 2·2 was 3,998 out of which 3,517 were tribals constituting 87·97 per cent and 437 are Scheduled Castes constituting 11·83 per cent. Population in the category 'Others' was only 8.

The total population of ten non-Kutia villages which come within K.K.D.A. area was 2,040 according to 1981 Census as shown in Table 2·3. Among them 342 belong to Scheduled Tribes, 969 to Scheduled Castes and 729 to the category 'Others'. The total population of the villages/hamlets covered by tha K.K.D.A. and of these ten non-Kutia villages was estimated at 6,038 with 1,304 households according to 1981 Census.

The growth of population in the villages within K.K.D.A, area estimated on the basis of population figures of 21 villages including their hamlets available in 1961, 1971 and 1981 Census reports is shown as follows :—

Period	Community		K. K. D. A.	Phulbani	Orissa
1961—71	Scheduled Tribes	..	+39·66	+17·07	+20·08
	Scheduled Castes	..	+95·31	+18·70	+19·79
	Total population	..	+42·85	+20·85	+25·05
1971—81	Scheduled Tribes	..	+14·89	+12·70	+16·68
	Scheduled Castes	..	+12·80	+11·44	+16·70
	Total population	..	+13·55	+14·65	+19·72

The growth of population in all categories in the K.K.D.A. villages during the decade 1961—71 was much higher than that recorded at the district level and State level. But during the decade 1971—81, the growth rate among all categories is lower than that of the State. Scheduled Castes recorded the highest growth rate, i.e., 95·31 per cent during 1961—71 while the Scheduled Tribes recorded better growth rate during 1971—81.

Villagewise Kutia Kandha households and population as per the survey in 1980 and 1990 conducted by the K.K.D.A. are presented in Table 2. In 1980 there were 816 Kutia Kondh households with a population of 3,706 in 66 Inhabited villages with an average stze of household around five persons (4·66). In 1990, the number of households has gone up to 1,025 with a population of 4,090 in 68 inhabited villages. The average size of household is slightly less than four persons (3·89).

The Kutia Kandhas have recorded the sex-ratio of 1,092 females in 1990 per 1,000 males as against 1,038 in Phulbani district and 1,012 in the State for the Scheduled Tribes during 1981 Census.

The percentage of literacy was only 2·9 in 1980 according to the K.K.D.A. sources. But as per the sample survey conducted in May, 1991, the percentage of literacy is estimated to be 7·92 as against 18·59 per cent, for the district and 13·96 per cent for the State for the Scheduled Tribes (1981 Census).

TABLE 2·1

Number of Kutia Kandha households and population in K.K.D.A. as per survey in 1980 & 1990

Sl. No.	Name of the village	Kutia Kandha, 1980			
		Household	Population		
			Total	Male	Female
(1)	(2)	(3)	(4)	(5)	(6)
1	Tidipada ...	7	50	35	15
2	Guchuka ..	14	98	44	54
3	Pikushi ...	21	116	64	52
4	Ushabali ...	18	64	37	27
5	Dupi ...	25	162	68	94
6	Guma Colony ...	24	73	35	38
7	Kalanguda ..	12	52	28	24
8	Pringel ...	20	79	36	43
9	Bariguda ..	3	13	5	8
10	Pedam ...	15	64	33	31
11	Nuanmunda ..	14	42	26	16
12	Sipidikhol ...	8	36	23	13
13	Kanibaru ...	19	80	43	37
14	Sindhibali ..	7	30	14	16
15	Lindranga ..	12	38	18	20
16	Sukarapadar ..	5	17	5	12
17	Paeramal ..	5	20	11	9
18	Bhaluguda ...	8	36	20	16
19	Bhandarsala ...	7	19	8	11
20	Golampanga ..	14	53	25	28
21	Kineri ..	18	73	37	36
22	Jamuguda ...	3	12	9	3
23	Mathaghati ...	4	10	4	6
24	Sulapata ..	7	31	14	17
25	Pagarpadi (A) ..	9	30	13	17
26	Randanga ..	20	53	26	27
27	Karanja ...	14	54	27	27
28	Gambari ..	7	32	17	15
29	Saperi ..	18	64	34	30
30	Sushabhata ...	13	43	20	23
31	Tulangapadi ..	12	42	25	17
32	Pukuru ..	8	32	15	17
33	Turli ..	3	16	9	7
34	Karibhata ...	2	9	6	3
35	Deogada ..	23	139	66	73
36	Talangapadar ..	419	..	..	..
	Total ..	419	1,782	900	882

TABLE 2·1—Contd.

Number of Kutia Kandha households and population in K.K.D.A. as per survey in 1980 & 1990

Sl. No.	Name of the village	Household	Kutia Khandha 1990		
			Population		
			Total	Male	Female
(1)	(2)	(7)	(8)	(9)	(10)
1	Tidipada	5	25	17	8
2	Guchuka	17	66	32	34
3	Pikushi	24	66	35	31
4	Ushbali	22	89	37	52
5	Dupi	34	144	58	86
6	Guma Colony	31	111	48	63
7	Kalanguda	14	68	31	37
8	Primgel	19	27	12	15
9	Bariguda	7	24	11	13
10	Pedam	17	89	46	43
11	Nuanmunda	21	91	48	43
12	Sipidikhol	8	23	12	11
13	Kanibaru	27	109	57	52
14	Sindhibali	6	33	14	19
15	Lindranga	19	75	24	51
16	Sukerapadar	6	28	16	12
17	Paeramal	5	15	8	7
18	Bhaluguda	12	61	25	36
19	Bhandarsala	6	17	7	10
20	Golampanga	18	67	33	34
21	Kineri	16	61	30	31
22	Jamuguda	1	7	4	3
23	Mathaghati	3	11	4	7
24	Sulapata	16	29	15	14
25	Pagarpadi (A)	16	74	34	40
26	Randanga	19	88	13	45
27	Karanja	14	77	35	42
28	Gambari	17	38	20	18
29	Saperi	26	69	34	35
30	Sushabhata	15	61	27	34
31	Tulangapadi	15	58	28	30
32	Pokuru	Uninhabited	..	...	...
33	Turli	Uninhabited	..	..	...
34	Karibhata	1	4	3	1
35	Deogada	20	91	44	47
36	Talangapadar	504	126	66	60
	Total	504	0,020	928	1,064

TABLE No. 2·1—*Contd.*

Number of Kutia Kandha households and population in K. K. D. A. as per suryey in 1980 & 1990

Sl. No.	Name of the village	Kutia Kandha, 1980			
		House hold	Population		
			Total	Male	Female
(1)	(2)	(3)	(4)	(5)	(6)
37	Kadapana ..	17	96	46	50
38	Tuakala ..	18	102	53	49
39	Sana Tuakala ..	3	16	9	7
40	Geramali ...	26	147	58	89
41	Dahabali ..	..	...	..	...
42	Badakumundi ..	11	50	29	21
43	Batipada ..	31	121	65	56
44	Gurlimuska ..	11	53	26	27
45	Tarangabali ...	9	36	15	21
46	Gunusupa ..	16	77	35	42
47	Adalangu ...	..	...	...	...
48	Sadangi ...	17	63	31	32
49	Girisasa ...	...	...	...	...
50	Sanakumudi ...	3	36	17	19
51	Kusumunda ...	11	75	33	42
52	Rajam ...	14	43	23	20
53	Saparibhata ...	7	33	18	15
54	Galebada &				
55	Muskasaru				
56	Dhamamaska ..	11	48	31	17
57	Mundimaska ...	4	21	9	12
58	Karalangi ...	7	36	18	18
59	Ambidikhol ..	4	20	11	9
60	Mandamaska ..	15	60	29	31
61	Bikapanga ...	8	39	22	17
62	Muchedbaru ...	6	27	15	12
63	Srambuli ...	3	17	6	11
64	Kranjikana ..	15	52	21	31
65	Garanga and Dhamnapanga ..	20	81	44	37
66	Rangaparu ...	72	438	198	240
67	Sembadalpadar ...	9	34	18	16
68	Paskadi ...	...	...	...	...
69	Burlubaru ...	16	135	66	69
70	Madalakana ...	5	45	14	31
	Total ..	808	3,783	1,860	1,923

TABLE No. 2·1—*Concld.*

Number ot Kutia Kandha households and population in K. K. D. A. as per survey in 1980 & 1990

Sl. No.	Name of the village	Kutia Kandha, 1990			
		Household	Population		
			Total	Male	Female
(1)	(2)	(7)	(8)	(9)	(10)
37	Kadapana ..	18	77	37	40
38	Tuakala ...	20	78	36	42
39	Sana Tuakala ..	3	14	8	6
40	Geramali ...	52	187	77	110
41	Dahabali ...	6	30	14	16
42	Badakumundi ...	12	52	26	26
43	Batipeda ..	30	114	54	60
44	Gurlimuska ..	18	73	36	37
45	Tarangabali ...	11	45	22	23
46	Gunusapa ...	15	70	33	37
47	Adalangu ...	9	40	21	19
48	Sadangi ...	15	57	25	32
49	Girisasa ..	10	44	22	22
50	Sanakumudi ..	6	26	13	13
51	Kusumunda ..	14	55	25	30
52	Rajam ..	17	62	29	33
53	Saparibhata ...	11	41	20	21
54	Galebada & ..	9	36	19	17
55	Muskasaru ..	...	...	..	..
56	Dhumamaska ..	21	90	40	50
57	Mundimaska ...	19	58	29	29
58	Karalangi ..	8	28	13	15
59	Ambidikhol ...	4	13	7	6
60	Mandamaska ...	9	33	17	16
61	Bikapanga ..	6	26	13	13
62	Muchedbaru ...	8	31	16	15
63	Srambuli ..	4	21	12	9
64	Kranjikana ...	19	84	42	42
65	Garanga and Dhamnapanga ...	19	89	51	38
66	Rangaparu ..	80	319	146	173
67	Sembadaipadar ...	11	35	18	17
68	Paskadi	7	22	11	11
69	Burlubaru ...	32	100	50	50
70	Madalakana ...	4	24	10	14
	Total ...	1,031	4,094	1,920	2,146

TABLE 2·2

Villagewise population as per the Census, 1981

Sl. No.	Name of the village and hamlet (s) within bracket	No. of house-hold	Population. 1981			
			Total	Sch. Tribe	Sch. Caste	Others
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	Tidipadar ...	8	40	32	8	...
2	Chchuka ...	14	72	67	5	...
3	Pikushi ...	18	80	79	1	...
4	Ushabali ...	17	79	59	20	...
5	Dupi ...	30	147	120	25	2
6	Pukuru (Guma Colony) ...	Not available				
7	Kalanguda ...	13	70	64	6	2
8	Pringel ...	15	74	74	..	...
9	Pedam ..	13	70	67	3	...
10	Nuamunda ..	24	103	93	10	...
11	Sipidikhole ...	8	37	37	...	...
12	Kaniharu ..	23	121	113	8	...
13	Sindhibali ...	Not available				
14	Lidranga ...	32	122	82	40	...
15	Bhaluguda (Sukerpadar) ...	22	86	50	34	2
16	Paermala ...	20	83	78	5	...
17	Bhandar Sala ...	17	72	72	...	...
18	Golampanga ...	17	75	60	15	...
19	Kinari (Mathaghati) ..	24	117	100	17	..
20	Jamuguda ..	Not available				
21	Solapata ..	6	31	26	5	...
22	Pagarpadi (A) ..	19	112	98	14	...
23	Randanga ...	20	80	65	15	...
24	Kranja ...	14	81	55	26	...
25	Gambhari ...	7	43	43	...	...
26	Saperi ...	17	76	58	18	...
27	Susha Bhata ...	27	103	47	56	...
28	Tulangapadi ...	Not available				
29	Pukuru (Bariguda) ...	19	101	94	7	...
30	Kanibhata ...	Not available				

TABLE 22—(*Concld.*)

Villagewise population as per the Census, 1981

Sl. No.	Name of the village and hamlet (s) within bracket	No. of house-holds	Population, 1981			
			Total	Sch. Tribe	Sch. Caste	Others
(1)	(2)	(3)	(4)	(5)	(6)	(7)
31	Turli		Uninhabited			
32	Deogada (Talangapadar)	23	115	109	5	1
33	Kadapana	15	72	66	6	..
34	Tuakela	16	82	75	7	..
35	Sanatuakela	3	12	12	..	..
36	Germeli	35	153	137	16	..
37	Dahabali		Not available			
38	Badakumudi	11	51	51	..	..
39	Batipada	6	154	143	11	..
40	Gurlimaska (Gunusupa)	33	150	144	6	..
41	Targabali	10	48	36	12	..
42	Adalangu		Not available			
43	Sadangi	14	51	51	..	..
44	Sanakumudi	4	25	..	25	..
45	Kusumunda	11	48	45	3	..
46	Rajam	12	58	54	4	..
47	Saperibhata	8	28	28	..	..
48	Galebada (Muskasaru)		Uninhabited			
49	Dhumamaska	19	77	67	10	..
50	Mundimaska	20	69	69	..	..
51	Karlangi	13	51	45	6	..
52	Ambidikhole	2	7	7	..	..
53	Bikapanga (Muchedbaru)	15	60	59	1	..
54	Karanji Kana (Srambuli)	13	56	56	..	..
55	Dhamnapanga & Garanga	21	86	73	13	..
56	Rangaparu (Semadeipadar) (Girisasa) (Mandamaska)	74	337	333	4	..
57	Paskadi	2	4	4	..	..
58	Burlubaru (Madalikana)	26	129	122	6	1
	Total	**850**	**3,998**	**3,517**	**473**	**8**
			(100 %)	(87·87%)	(11·83%)	(0·20%)

TABLE 23

Villagewise population of non-Kutia villages in the area,

Sl. No.	Name of the village	House-holds	Population, 1981			
			Total	S. T.	S. C.	Others
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	Silukudi ...	7	28	..	..	28
2	Dharanimaska ..	16	55	...	..	53
3	Khadapanga ...	40	180	7	35	138
4	Paikapada ..	8	39	..	12	27
5	Bibamala ...	88	381	11	176	194
6	Dhudusi ..	91	401	3	275	123
7	Jhalipada ..	36	138	...	135	3
8	Belghar ...	138	707	271	336	100
9	Guibali ...	9	36	..	..	36
10	Mahabali ..	21	75	48	..	27
	Total ...	454	2,040	340 (16·75 ·/.)	969 (47·50 ·/.)	729 (35·74 ·/.)

Infrastructural facilities:

2·1·17. The Agency headquarters at Belghar is connected by the Tumudibandh-Belghar-Dharnimaska P. W. D. Road which is partly Pucca and partly Katcha intersected by hill streams and rivers over which culverts/bridges are yet to be constructed to make the road all weather. This road goes up to Ambadela in Koraput district. In addition to this a number of Katcha roads of 110·75 Kms. in length are constructed by different Agencies as given below and they can only be used during fair-weather only.

TABLE 2·4

Present status of communication facilities in Kutia Kandha area

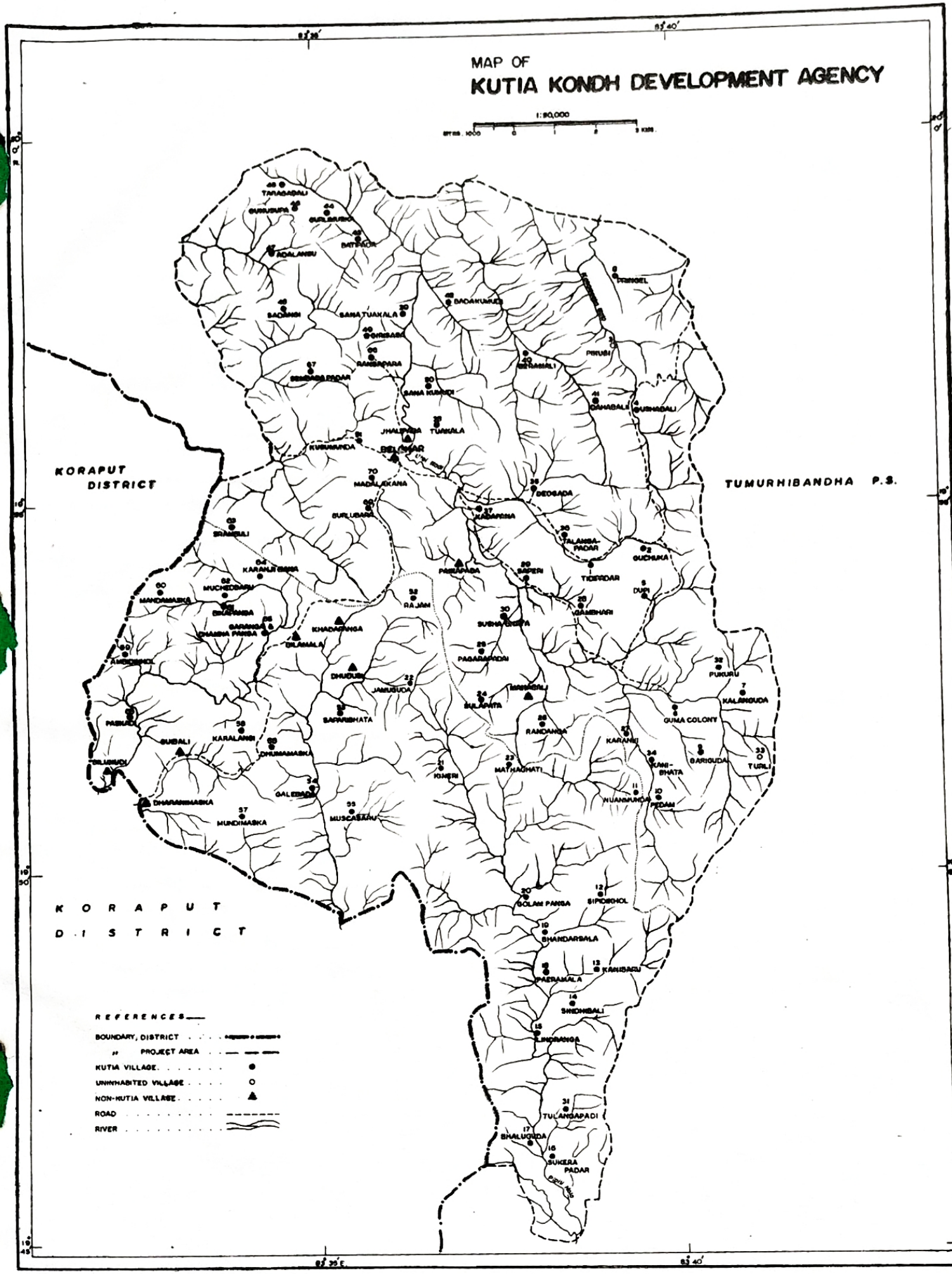
Sl. No.	Name of the road and its distance in Kms.	Type of road	Present position	Remarks
(1)	(2)	(3)	(4)	(5)
1	Road to Ushabali 1 Km. ..	All weather	Metalled	Constructed with I. T. D. A. fund.
2	P. W. D. road to Pikusi and Tarlangi $3\frac{1}{2}$ Kms.	All weather	Metalled	Ditto
3	P, W. D. road to Guma—5 Kms.	All weather	Metalled	Constructed with Block fund.
4	Gumma to Kalamguda Panchayat road—2 Kms.	Fair-weather	Earthen	Ditto
5	Gumma to Padam Panchayat road—3 Kms.	Fair-weather	Earthen	K. K. D. A.
6	Gumma to Pingal Panchayat road—3 Kms.	Fair-weather	Earthen	Block
7	Gumma to Nuamunda (Panchayat road)—3 K.ms.	Fair-weather	Earthen	Block fund

Sl. No.	Name of the road and Its distance in Kms.	Type of road	Present position	Remarks
(1)	(2)	(3)	(4)	(5)
8	Gumma to Kranja Panchayat road—2 Kms.	Fair-weather	Earthen	K. K. D. A.
9	P. W. D. road Deogarh—$\frac{1}{2}$ Km.	All weather	Metalled	Block
10	P. W. D. road Guthuna—$1\frac{1}{4}$ Kms.	All weather	Metalled	Block
11	P. W. D. road Tidipadar—$\frac{1}{4}$ Kms.	All weather	Metalled	Block
12	P. W. D. road Gumma—14 Kms.	All weather	Metalled	Block
13	Panchayat road to Gambhari—2 Kms.	All weather	Metalled	Block
14	Panchayat road Belghar to Rangapara—4 Kms.	All weather	Metalled	Block
15	Panchayat road Rangapara to Batipada—5 Kms.	All weather	Metalled	K. K. D. A.
16	Panchayat road Sardangi to Adalanga, Targabali, Batipada—8 Kms.	All weather	Metalled	I. T. D. A. & K. K. D. A.
17	Panchayat road Belgar to Tuakala—$1\frac{1}{2}$ Kms.	All weather	Metalled	Block
18	P. W. D. road Kadapana to Rangapara—5 Kms.	All weather	Metalled	K. K. D. A.
19	P. W. D. road to Burlubaru $1\frac{1}{4}$ Kms.	All weather	Metalled	Block
20	P. W. D. road to Rajam—2 Kms.	All weather	Metalled	K. K. D, A.
21	P. W. D, road to Kranjikana 5 Kms.	All weather	Metalled	I. T. D. A.
22	P.W.D. road to Dhudusi—3 Kms.	All weather	Metalled	Block
23	Panchayat road to Saponbhata and Nuskasaru—6 Kms.	All weather	Metalled	I. T. D. A.
24	P.W.D. road to Goranga—3 Kms.	All weather	Metalled	I. T. D. A.
25	P. W. D. road to Dhumamaska—1 Km.	All weather	Metalled	K. K. D. A.
26	P. W. D. road to Karlangi—1 Km.	All weather	Metalled	K. K. D. A.
27	P. W. D. road to Mundimaska 3 Kms.	All weather	Metalled	Block
28	Panchayat road to Dhubasita, Golampanga, Fairmala—15 Kms.	Fair-weather	Earthen	K. K. D. A.
29	Panchayat road Sapari to Raudang—6 Kms.	Fair-weather	Earthen	Block
30	Panchayat road Susabhata to Salpati—3 Kms.	Fair-weather	Earthen	I. T. D. A.
31	Belghar to Paidaslaski $1\frac{1}{2}$ Kms.	Fair-weather	Earthen	Block
	Total .. 110·75 Kms.			

2·1·18. Various other infrastructural facilities so far available within the villages and the distance from the villages of such facilities which ara not available within the villages but located in other villages are discussed here. In the Agency as many as 13 Pre-Primary Schools and 9 Anganwadi Centres are run, the former by the K. K. D. A. and the latter by the Tumudibandh Block. In addition to these, 19 Primary Schools, three M. E. Schools at Belghar. Guma and Dhudusi and one High School at Belghar are functioning in the area. As many as 29 villages still depend on Primary Schools located beyond 1—3 Kms. and the remaining 22 villages have no Primary School within 3 Kms. radious.

2·1·19. For medical facilities the local inhabitants are dependant upon the 12-bedded hospital at Belghar Primary Health Centres located at Tumudibandh, Kotgarh and Ambadola and the Sub-Centre at Guma. As may as 45 villages out of 68 inhabited villages have so far been provided with 58 numbers of tube-wells. Thus, remaining 23 villages are yet to be provided with tube-wells. One Veterinary Assistant Surgeon with his supporting staff posted at Belghar looks after the health of the domestic animals.

2·3·4. As regards Co-operative organization, a branch of LAMPs., and a branch of T. D. C. C. are located at Belghar. A branch of Kalahandi Anchalika Gramya Bank is functioning at Belghar. The inhabitants visit weekly markets at Belghar, Tumudibandh and Ambadola. Headquarters Police-station and Forest Range Office are located at Belghar.


MAP OF
KUTIA KONDH DEVELOPMENT AGENCY
1:50,000
KORAPUT DISTRICT
TUMURHIBANDHA P.S.
KORAPUT DISTRICT
REFERENCES
BOUNDARY, DISTRICT
" PROJECT AREA
KUTIA VILLAGE
UNINHABITED VILLAGE
NON-KUTIA VILLAGE
ROAD
RIVER
TARAGADALI
GURUSUPA
GURLIMUSKI
BATIPADA
ADALANSU
SADANGI
SANA TUAKALA
GIRISASA
RANGAPARA
SEMBARA PADAR
BADAKUMUDI
PRINGEL
PIKUSI
BERAMALI
DAHABALI
GUSHABALI
SANA KUMUDI
JHALPADA
TUAKALA
KUSUMUNDA
BELAHAR
MADALAKANA
SURLUBARA
DEOGADA
KADAPANA
TALANGA-PADAR
GUCHUKA
TIDIPADAR
SAPERI
PAIKAPADA
SRAMBULI
KARANJI BANA
MUCHEDBARU
MANDAMASKA
BIKAPANGA
GARANGA & DHAMNA PANGA
KHADAPANGA
DILAMALA
RAJAM
SUSHA BHATA
GAMBHARI
DUPI
PAGARAPADAI
AMBIDIKHOL
DHUDUSI
JAMUGUDA
MAHABALI
SULAPATA
PUKURU
KALANGUDA
GUMA COLONY
SAPARIBHATA
RANDANGA
KARANJI
PASKADI
GUIBALI
KARALANGI
DHUMAMASKA
BILUNUDI
KINERI
MATHAGHATI
KANI-BHATA
BARIGUDA
TURLI
GALEBADA
DHARANIMASKA
MUNDIMASKA
MUSCASARU
NUANMUNDA
PEDAM
GOLAM PANGA
SIPIDIKHOL
BHANDARSALA
PAERAMALA
KANIBARU
SINDHIBALI
LINDRANGA
TULANGAPADI
BHALUGUDA
SUKERA PADAR
83°35'E
83°40'

Habitation and Settlement :

2·1·21. The habitation and settlement pattern of the Kutia Kandhas of Belghar and Gumma area are unique for traditional more of selection of site, construction, design and placement of functional areas. Significant landmarks around the settlement and structural outlook of the hutments are its special features. Skill and technologoy applied in several in phases of construction, materials required for construction and functional use of space inside the house give insight and knowledge of so called marginal, pre-farming and pre-literate Kutia Kandhas.

2·1·21. From the origin and course of development of settlement it is ascertained that Kutia Kandha villages were uniclan. But gradually most of the villages are now found to be inhabited by multi clan groups and people of other ethnic groups. However, strong feeling of community co-operation, as the basic characteristic feature of Kutia Kandha settlement, is so far existing.

2·1·22. While selecting a site for habitation, the traditional magico-religious heads and secular leaders foresee from several angles. The major criteria that are taken into greater consideration are high and elevated land scape, availability of perennial water source nearby and sufficient virgin forest having luxuriant growth all around which must provide adequate land for slash and burn type of shifting cultivation, seasonal forest produce, materials for house construction and grazing ground for their cattle wealth.

2·1·23. From the structural design and placement of houses one can witness the evidence of social solidarity and oneness feeling among the Kutia Kandhas. Two rows of attached houses, across a rectangular space, face each other. All the Kutia Kandha houses of a village maintain on single roof-ridge along a single row. Although each house has its partitioning wall, the verandah run continuously from one end to the other. The houses are of almost same type but may vary in size from one group to the other which depend on the economic condition and number of family members of the household. Number of houses vary from 5 to 50 and built on steep hill sides flatten to a gentle slope. The village street is quite wide, neat and clean and at the middle Meriah pole is installed before which *Darani Penu (Wangu Penu)*, earth goddess is enshrined. The street is always situated in east-west direction. In support of this the Kutia Kandhas tell that 'Sun' is the guardian of all the deities and spirits who gives direction for all good happenings. The sunlight is very powerful and washes away all evils, hence each house must share sunlight of the day equally. If one analyses scientifically it makes clear that the sunlight in the winter season help each household to keep the house warm and wind passes freely in the summer too. They prefer an elevated place because in the rainy season the rain water can be drained out easily and quickly.

2·1·24. In each village atleast one Domb house is usually located a little apart in back side of the settlement. The cowsheds are situated close to the settlement but at the back of hutments. Other hutments are boys' and girls' dormitory in a village which are just like any other typical Kutia Kandha house.

2·1·25. The house construction among the Kutia Kandha involves traditional technique, village co-operative efforts, division of labour and prescribed ritualistic observances. A house may be constructed in a new site when the old settlement is abandoned or in the same settlement when family members are increased due to addition of members by marriage and unable to be accommodeted there.

2·1·26. After the selection of a suitable site necessary materials are procured by the members of concerned households. The male members collect required wooden pillars and beams, bamboo pieces, *siali* fibre and thatching grass from the nearby forest. The women are expected to perform all works connected to soil works and plastering. The thatching including preparation of frame of the roof is the duties of the male folk. The females do their best to plaster the walls, prepare the hearth and raise shelves for keeping the cooking and water pots. They use polished

round stone pieces to make the floor smooth. Special care is taken to give the final touch to the placement for ancestral spirits. Each Kutia Kandha main room is having a ceiling which serves as the store house. Apart from this, over the hearth a bamboo pole is horizontally hung for drying grains and meat. Inside the main room they keep goats and chicken at the opposite side of the hearth. One raised place inside the house is earmarked by installing a bifurcated notched pillar at the back. All the outside guests and important elderly male kins are supposed to sit and this place is prohibited for women. Before taking shelter inside the house magico-religious rites are performed to appease various ancestral spirits. The Kutia Kandha's main room is used for cooking, sleeping, storing, dining and other purposes as and when required and works like grinding of ragi and husking of paddy and small millets are also done there. They keep domesticated animals and birds like goat, chicken and pigeon inside the main room The front verandah serves many purposes and it is used as drawing room and guest room. It is also a place for entertainment and community integration. The back verandah is mostly used by the women for their group discussion, personal interaction and private purposes. Male members keep themselves away from the back verandah.

2·1·27. Now-a-days one can find a lot of *Khaper* thatched houses coming up in villages all over the Belghar and Gumma area. The Kutia Kandhas themselves are hiring Khapar-makers from the plain area for making khapars to thatch their houses. The doors and shutters are made by skilled Kutia Kandhas. The carved design on the shutters done by the males and paintings on the walls made by the female folk are very attractive. Quite a good number of houses in different villages are found constructed by bricks and thatched by *Khapar*. The houses of magico-religious specialists and secular heads are almost same as those of other houses of the village. The contents of the house and the size of room may vary according to their respective need. The designs and paintings drawn on the walls depend on the women folk and their skill. To make the floor and wall surface smooth and beautiful they use graphite soil, red soil, and lime soil, etc.

2·1·28. Economy and Technology.

The economic life of the Kutia Kandha is largely influenced by and developed in the forest environment, Starting from the birth up to the death, all happenings in between, are directly or indirectly linked with forest. The forest provides them food, cloth and materials for construction of houses. All over the year Kutia Kandhas, collect multifarious mushrooms, green leaves, shoots, tubers and roots, stems, flowers, fruits, seeds and kernels from the forest in their respective growing seasons. All these were abundantly available in old days and even today they depend on these collections to a large extent. In the lean period many of them absolutely depend on certain nutritive tubers, the availability of which has gone down due to devastation of forest. However, in the summer months they depend on mahua flower, mango and tubers and in the early rainy season they eat mango kernels and bamboo shoots along with several green leaves and mushrooms. The Kutia Kandha boys and girls from their late childhood became acquainted with several forest plants and produces which are used by them in different ways. As they spend most of their time in forest they get ample opportunity to develop their knowledge in this line. Collection of lac gum, honey, hill broom, fibre, leaf for the preparation of cups and plates are occasional works which pay good cash to the Kutia Kandha.

2·1·29. Mahua flower is one of the essential forest produce in the Kutia Kandha area and its flower and fruits are socio-economically very significant. In its season, people of all age-groups go for collection which they eat, sell for money and use for distilling liquor in the traditional method. The Mahua seeds are used for extraction of oil which is mostly used by the Kutia Kandhas. They collect fire wood and herbal medicines from the jungle. One of the very essential materials is thatching grass which they collect from the nearby

forest. The forest also provides food for their cattle. The Kutia Kandhas collect a type of fruit locally known as "*Japak*" out of which they make necklace and put on to prevent from headache and bodily pain.

2·1·30. The forest gives shelter to several wild animals, birds and hunting games. Due to strict forest policy and denudation of forest hunting games have declined to a great extent. The Kutia Kandhas also go for fishing in the perennial streams which are flowing inside the forest.

2·1·31. The bamboo is one of the important forest products which is used for house construction. The Kutia Kandhas make beautiful tobacco-containers and flutes using hollow bamboo shoots. Mats, fishing traps, baskets and many other beautiful and useful household materials are made out of bamboo splits. They make bow and shaft of arrow out of bamboo. The Kutia Kandhas also use implements, household materials and personal belongings made out of suitable wood and bamboo.

2·1·32. In one way or other the Kutia Kandhas make best use of various materials procured from the forest. They exploit the resources in best possible way and at the same time they know how to preserve the species and other living and non-living materials for their future generations. It is not out of the way to mention that either due to environmental compulsion and as an immediate means to produce something for subsistence the Kutia Kandhas practise slash and burn type of shifting cultivation. No doubt that this pernicious practice has already alarmed the survival of mankind in the area. The depletion and devastation of forest has already threatened the human survival. But according to the Kutia Kandhas this is the most suitable practice and it involves socio-economic and cultural factors. Even after several experiments and endeavours to prevent this practice an extensive arealis found to be covered under 'Bagad' in Kui 'Nela' cultivation. Quite a good number of people including the non-tribal inhabitants practise this cultivation. Of course, the latter group of people have accepted it as a means for making cash. But for the Kutia Kandhas it is the means for survival and a way of life. The study of shifting cultivation among the Kutia Kandhas can give a comprehensive understanding of the total life and culture of the people. It involves a series of processes of activities and situations full of expeditions, hard labour, skill, technology, appeasement of spirits and merry-makings.

2·1·33. The village elites specially the magico-religious head and secular leader in consultation with the wise and elderly people locate the forest tract suitable for the shifting cultivation. Since pretty long they continue to watch the growth of vegetation in the forest belt. They select a suitable patch of land left fallow since many years within their village boundary and put it under such economic interaction. A particular patch of forest used for shifting cultivation for continuous three years is left fallow for more than five years. The fallow period may be deferred according to the growth of vegetation or indication of the divine power. But in normal case after five to six years, they again come back to a particular patch. After selection of the site all the villagers prepare beer (*Katul*) out of small millets within a week and then perform necessary magico-religious rite on community level in the village and subsequently in the forest track selected for cultivation. A large area is demarcated in presence of all the villagers keeping in view the need of the individual families. Then the entire area is distributed among the villagers on the basis of the number of family members. If the area is scarce then the land is equally distributed among the families of the village. But usually the former method is adopted as the area is quite vast. Some households cultivate two plots if the working members in the family are more. Area for each family is demarketed in presence of the villagers hence nobody encroaches other's area. After allotment of plots each family takes care of its respective plot in giving boundary mark and cleaning the area.

Cutting of the trees in the plot allotted to respective households is done by their own family members. If economically sound the house owner may hire labour or take village community labour force on payment of cash or kind while cutting the grown up trees. Precaution is taken not to cut the fruit trees and medicinal plants. The other trees are cut leaving the stump about 3 to 4 ft. height. These stumps provide support for the creeper variety of crops. The cutting operation usually takes place in the month of February and March. Cut trees and bushes are left for some days to be dried up. Care is taken to have equal distribution of twigs to cover the whole surface with the view to provide ashes for the entire area. While setting fire they see that the fruit trees and herbal medicinal plants are not burnt or affected.

The sowing operation starts in the months of May and June. Specific varieties of seeds are stored for shifting cultivation area which are sown and hoed. Some varieties of seeds, particularly vegetables and pulses are sown after digging the soil by a pointed stick. Both males and females work in sowing operation. The Kutia Kandhas use upper part of the slope of same plot for raising pulses and lower part for ragi, maize and small millets. In the middle zone they raise vegetables and tubers. The sowing operation continues for fortnights together as different seeds need to be sown in their respective sowing seasons. Frequently, the household members visit the spot after sowing for watching percentage of germination of the seeds and distribution of plants in the field. Sometimes resowing may be needed if there is heavy rain or no rain in time. But once all the seeds grow into plants then the household members feel very happy and arrange for sacrifice of a pig on community level. On one hand they get excited and happy and on the other hand wait eagerly for the coming operation for better harvest. After the community level sacrifice, while the plants are about 1 ft. height, they start weeding away all the bushes and grasses injurious to growth of the plants. In the first year of cultivation usually not much labour is required but for subsequent two years even one may go for indebtedness to weed away the injurious grasses and bushes. Such weeding sometimes need more than once before flowering. The weeding work is mostly done by women as it is time taking process and needs sincere care. During weeding and flowering of the crops some propitiations and sacrificial offerings may be needed and it depends on the natural calamity and attack of insects and locust.

By the time the plants are fully grown and get ears, the jungle animals start creating problem. Hence, immediately they raise temporary huts in the field or on a tree according to the suitability. Whatever care, watch-and-ward arrangement may be made with enthusiasm and anxiety but in each case the wild animals like wild boar, deer, sambar, peacock, wild chicken, etc., destroy about more than 25 per cent of the harvest. They feel helpless in the night to save the crops ready for harvest and particularly in the winter nights. For this the entire family is shifted to the temporary shed raised in the shifting cultivation field for months together till the harvesting work is completed.

The reaping of corns usually takes place after performance of individual level sacrifices. As different crops are ready for harvest in separate time they pluck corns one after the other quite leisurely. They start harvesting corns when these are fully matured and some corns fall down. These corns act as seeds for the coming year as the Kutia Kondhs by practice need to sow seeds in the second and third year. Till completion of the harvest of all varieties of crops grown in the field watching huts are not demolished. At the time of harvesting the crop, the so called traditional owner of the shifting cultivation patches, out of which so much of production could be possible, offers a buffalo sacrifice. If he cannot afford then later on he may perform the same according to his convenience within the shortest possible time. Among the Kutia Kandhas traditions and religious beliefs become more important than mere agricultural production and biological needs. In the cycle of various agricultural operations multifarious occasions come across which are related to eating of new food items and to retain socio-cultural practices undisturbed.

Several attempts have already been made by the Government to wean away the practice of shifting cultivation among the Kutia Kandhas. Unless some viable economic alternatives are provided the above practice may not be stopped completely.

Other than the area under slash and burn type of shifting cultivation, the Kutia Kandhas have plains valley table land on very less slope area. These areas are cultivated where *ragi*, small millets, oil-seeds and some vegetables are grown but the seed types used are different to that of needed for shifting cultivation fields. The Kutia Kandhas use natural manure particularly cowdung on these lands for better crop. Apart from this many people are having wet land near the stream or valley surrounded by hills from all sides. Many Kutia Kandhas have already sold or mortgaged these lands and it is a relevant factor for going to cultivate forest patches. All the Kutia Kandhas have great liking a d preference for these wet land. Now-a-days every Kutia Kandha is quite conscious of taking an adequate care of the wet land which their forefathers were having. Their emotional attachment and steps taken to convert the table land or valleys near streams into wet land shows positive attitude of the inhabitants in search of suitable alternatives as substitute of shifting cultivation. The status, prestige, the religion, sense of belongingness and culture in broader sense revolve round land in any form. Hence, it is to be emphasized, understood and cared with sincerity to uproot the ongoing problems connected with land among the Kutia Kandhas.

Major problems are due to enforcement of new forest policy. The Kutia Kandhas are formally deprived of their age-old right over the area under their possession since time immemorial. In several villages wet land which they have converted with much difficulty and even their homestead land are included either under reserve or proposed reserve forest. The transfer of land either through legal procedure or traditional method need special attention with the aim to rehabilitate the Kutia Kandhas and to control the age-old pernicious practice of shifting cultivation. Keeping in view the life-style and culture of the Kutia Kandhas care should be taken to lease out land to the community on priority basis.

The material culture of the Kutia Kandhas is interesting and important with regard to their origin, sources of invention, skill and technology therein, function and socio-cultural implication. In the material world of the Kutia Kandhas mention may be made of, in broader sense, the house, hunting weapons, agricultural implements, fishing nets and various traps, musical instruments, dress and ornaments, household materials, personal belongings and multifarious arts and crafts. Among different aspects of material culture one can take into account the economic, religious, political, social and other aesthetic values of an individual and the community as a whole.

In the Kutia Kandha community every individual is skilled in some kind of crafts and traditionally trained in making several items he needs. There are people very much expert in certain items but almost everybody knows something.

Weapons used by the Kutia Kandhas mostly are bows and arrows of different kinds, axes, adzes, spears, swords, knives, harpoons, pellet bows, traps, nets, guns, etc. Among the agricultural implements one can find dibbles, pointed sticks of iron picks, hoes, spade, crowbar, ploughs, yoke, levellers, sickle, etc. The musical instruments, like flute, conical drums, single-membraned drum, violin, harp, trumpet, musical bows, gong, etc., which are further subdivided according their size, shape, mode and occasion of use. They use several types of baskets mostly made out of bamboo splits. Various earthenware pots are supplied to them by the potters of the locality as they themselves do not make pots.

The Kutia Kandha females use many kinds of ornaments starting from bead necklace to silver jewellery of different designs. Very beautiful ornaments made by the local Scheduled Caste people out of brass in the lost-wax process are purchased by them for use. The females use ornaments of varieties all over the body from

head to toe. The rings, hair clip, bead necklace, comb necklace, a type of seed necklace and palm-leaf knitted band are worn for decoration and beautification of the body. Some times these are put on as symbol of status and social prestige. Females put on two pieces of clothes one at the waist and the other hung from the neck up to the waist to wrap the upper part of the body. Male folk put on *dhoti* and also some ornaments to make them attractive. Forehead band made out of palm leaves and beads are made by themselves.

The Kutia Kandhas use *Sikakaya* fruits for washing their hair. A type of clay soil available in the locality and also ashes are used for washing body and clothes respectively. Personal care and decoration of the body are the important features of the Kutia Kandhas characteristics. Hair dressing and bodily deformation with tatoo marks are some native practices. Some of them are very good wood carvers and as per demand do it for their tribesmen. A lot of items are made by them out of wood, bamboo, gourds, horns, hides, leaves, stones, etc., for their own use. But they rarely work with metals. All the materials made of iron, brass, white metal, aluminium, silver, etc., are purchased from the other ethnic groups to which finishing touch or additional designs are added by the users. They use cots and bamboo mats for sleeping. The women are not allowed to use cots either for sleeping or sitting. Among household materials mention may be made of grinding stone, husking pestle and mortar, leaf-made umbrella, caps, etc. The personal belongings, like smoking pipe, tobacco container of verious designs and knife are significan . Although a lot of plastic and other items are found to be used by many Kutia Kandhas , the traditional materials are having its own lustre and sociocultural significance . Certain materials used by the Kutia Kandhas are symbols of self-identity, e. g., palm-leaf knitted head-band, special lead nacklaces, etc.

Except the clothes, pots, domestic baskets and metalic objects they try to make everything of their own. The raw materials they get from the resources available in their surrounding. The skill and simple technology they are having since generations are applied to get the best results. Women's skill in leaf-plate and mat-making and putting designs in several materials are of greater importance. Due to economic change and cultural transformation the material need of the Kutia Kandhas is increasing day by day. The weekly markets in Ambadola, Tumudibandh and Belghar are overcrowded by the Kutia Kandha youths for purchase of several material amenities. Items, like bi-cycle, umbrella, torchlight, better clothes, zinc or tin boxes, radio, shoes and many other articles are found to be possessed by them mostly due to the impact of modernisation. The fascinating bead necklaces and excellent tobacco-containers are vanishing crafts and needs immediate attention for their retention. By and large, the Kutia Kandhas in several villages have retained their traditional material culture intact as much as possible.

Both men and women earn for the family. All the Kutia Kandhas work hard in the shifting cultivation fields to get good harvest. A major part of the crops, particularly pulses and oil-seeds are sold for money. They also earn by selling the produces of *Padar* land, kitchen garden and wet land. Forest produces collected by the female folk and occasionally by the male members are sold in the market or to the co-operatives for cash. The Kutia Kandhas even today in remote inaccessible villages never go to work for money in the house of other ethnic groups. But now-a-days several avenues have been created for earning money. They usually do not prefer any work for wage but due to compulsion many of them have accepted works, like road construction, timber cutting, plantation work, etc. But always they give priority to the work of their own. New opportunities created by the Government help them to be engaged for better income. They may sell domesticated animals and birds for money at the time of absolute need.

They spend the major part of their income in celebrating festivals and appeasing innumerable spirits either in regular calendar or on marriage occasions and death rituals. Next to that they spend more in food items. Villages near Belghar and Gumma have different need and they spend in different ways. The Kutia Kandhas living in remote villages purchase salt, chilli, clothes, baskets, agricultural implements and earthen posts from the weekly market whereas the people living adjacent to towns purchase food-stuff and modern items from the shops established in Belghar, Gumma and, if needed, from Tumudibandha and Ambadola.

Now-a-days one can find that Kutia Kandhas are purchasing rice, millets, ragi and other food-stuffs. They also spend for house thatching and repairs which in recent past one could not think of. Apart from all these expenditure for clothes and liquor found quite noteworthy.

Youths of both sex groups spend for purchase of clothes and narcotics. The women purchase jewellery, cosmetics, fancy items and gifts for their lovers and beloveds. The unmarried elderly girls purchase modern cosmetics and plastic items from the shops and towns. Currently, Kutia Kandhas have been attracted towards bicycle, radio, torchlight, umbrella, shoes, designed boxes and many others.

The main factors for which a Kutia Kandha goes for loan are shortage of food in the lean period, payment of bride price and expensive marriage feast, expensive birth and death rituals, drinking habit, prolonged illness and fulfilment of multifarious social obligations. Natural calamities, celebration of Meriah sacrifice and to fight cases booked against them by Government officials are some of the occasional heavy expenses which lead them to indebtedness.

Money lenders who belong to their own and other communities take undue advantage of their economic hardship. The Scheduled Caste business community, local Sahukars who are engaged in financing loan exploit them by charging high rate of interest either in cash or kind. Since Kutia Kandha pays back the debt as per his commitment, nobody loses the temptation of investing among these faithful borrowers. As and when required very valuable possessions like ornaments, utensils, trees, wet-land even agricultural implements and personal belongings are mortgaged. According to the situation even more than 50 ·/. interest is charged. Attempts have been made since last three decades to make the Kutia Kandhas free from debt but so far not much could be done. Although Banks, TDCC, LAMPS and few other financing agencies are working for the Kutia Kandhas, still then yet importance of money lenders are seriously felt by the Kutia Kandhas.

A few works are earmarked for respective sex groups among the Kutia Kandhas. But a lot of works are done by both males and females particularly in their extensive agricultural operation. Women are expected to do major household works particularly cooking, husking and plastering of houses. There is no doubt that working hours of females are more than that of male folk. Very rarely one can find a Kutia Kandha woman sitting idle. The works which need much concentration, like weeding, transplanting, reaping and collection of corns, etc., are mostly performed by the women though it is not taboo for men. However, each sex group sticks to its work as per social sanction. Works are not strictly assigned according to one's age and sex but in practice all the minor works that need less strength and minimum physical stress and strain are done by the old people and younger boys and girls.

There are several zones of economic interaction between the Kutia Kandhs and others, starting from a village up to weekly markets. They have economic link with the local Dombs and Sahukars belong to higher caste people. Moreover, time to time pedlars dealing with several trade items visit their area to sell the material needs of the Kutia Kandhas. Business people reach them to collect their seasonal products and forest produces. Barter system to some extent so far exists. Monetary economy has dominated throughout the area. Markets are not only the places of economic interaction but also socio-cultural centres.

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There are several zones of economic interaction between the Kutia Kandhs and others, starting from a village up to weekly markets. They have economic link with the local Dombs and Sahukars belong to higher caste people. Moreover, time to time pedlars dealing with several trade items visit their area to sell the material needs of the Kutia Kandhas. Business people reach them to collect their seasonal products and forest produces. Barter system to some extent so far exists. Monetary economy has dominated throughout the area. Markets are not only the places of economic interaction but also socio-cultural centres.

For communal feasts and festivals the Kutia Kandhas collect contribute at the family level. The community funds are used for this purpose also. At the time of Meriah sacrifice families of different clans of the concerned village celebrating the festival must contribute as per the tradition. Payment must be made for the purchase of the buffalo for sacrifice out of this contribution.

Food and dietary habit of the Kutia Kandhas are influenced by the environment as a whole. Diet routine of the people varies according to season and economic condition of the household. But in general they take three times a day, i. e., morning, mid-day and in the late evening. Meals comprise of ragi-gruel, maize, millet and paddy rice, green leaves and vegetables as well as dry fish and meat. Apart from that multifarious edibles like, mushrooms, roots, shoots, leaves, flowers, fruits and seeds are also eaten as per availability in different seasons. For quite a long time from late summer up to end of the rains, Kutia Kandhas depend on yam, tubers, bamboo shoots, jack-fruits, Mahua flower, mongo and its kernel.

Normally, one can find people are eating rice or minor millets with dal or green leaves. In the working season they may carry cooked food for the whole family to the place of farming. Many of them raise temporary huts and cook there everyday. There are households which have two cooking places, one at home and the other in the field, where temporary hut is raised during agricultural operation. In fact food items are abundant in the winter months. They like buffalo flesh, dry fish and other non-vegetarian food more items than vegetarian food in all festive occasions and ceremonies, they relish non-vegetarian items. The vegetables, meat, mushroom and tender bamboo shoots are boiled and eaten. Many well-to-do and literate Kutia Kandhas use oil and hot spices while preparing curry and non-vegetarian items. Whatever food is left after consumption, is utilised for the next meal of the day. Sacrificial meat and ceremonial food are not cooked and eaten by the female folk.

They do not drink milk and eat eggs. Pork is not eaten by female. The emerging youths of both sexes have given up eating beef. During pregnancy a few food tabooes are observed. Children are not given any special diet. No doubt that people in the area specially the poor Kutia Kandhas suffer from vitamin deficiency and are in need of nutritive food items. during lean season rice is made available by the Government and the Micro Project is encouraging to raise various vegetable crops.

The Kutia Kandhas take their own brewed rice beer, Mahua liquor and Sago-palm sap. They usually consume rice beer brewed out of small millets and the same is used for magico-religious purpose. They also use various narcotics like tobacco leaf powder and paste. Some herbal medicines are mixed in rice beer and sago-palm-juice to make these intoxicant.

2·6, Social Organisation :

The Kutia Kandhas as an endogamous unit are having their distinct language, territory and style of life. Social organisation among the Kutia Kandhas involves the whole net work of social and religious spheres between different individual and groups. There are groupings among them for several social purposes. It is reflected in behavioural pattarn of the individuals and groups within the social frame work. Each group may be identified by kinship ties and modes of conduct in general.

Family is the smallest but primary and dominating unit among the Kutia Kandhas. It is mostly nuclear, patrilocal, patrilineal and patriarchal in character. Like many other trial communities major economic, social, religious and re-productive activities revolve round their family. It is observed that husband, wife and their unmarried children who live together under the same roof and share common kitchen comprise a family. The moment the son gets married constructs his own hut with the help of the villagers out of family funds. If parents are alive the youngest son is expected to remain with them at their old age. He is expected to take adequate care

of his widow mother and unmarried sisters. A Kutia Kandha may marry more than one wife, both the wives and their children share the same hut and hearth and lead harmonious conjugal life. Cases of levirate and sororate are also found. There are incidences of divorce and remarriage specially after death of the first wife of husband, as the case may be. In several villages one can come across single-member family, double-member family, extended family, etc. Distant relatives may stay with some one due to former's domestic problems or as latter's helping hand. The male head, i. e., husband commands superior position and has primary say in important family matters. The wife is very much sincere, devoted to her husband and dedicated worker in true sense of the term. She is a good partner in all social economic activities. It does not necessarily mean that her position is low in the family. A Wife is always hard working and keeps herself busy all the day along in one way or other for the family. Husband-wife relationship is informal and not worthy for their intimacy and mutual understanding. At the time of birth of a child, husband takes adequate care of the wife and performs all rituals till the purification ceremony. Inspite of intimacy, co-operation and remarkable co-ordination between the couple there are occasions of conflict and quarrel at times and it may lead even to divorce. In no case a husband is expected to be misbehaved or beaten by the wife which is a social offence and he should be fined by the traditional council. Extra marital relationship and incest, etc., are seriously viewed in the society. A woman, if suspected as to be a witch or proved barren may be divorced.

Parents look after the children with sincerity and care. They never believe in punishment but in excuses and affection. Although nursing part is left to the mother, father keeps the infant occasionally in his lap. During the childhood a female child is more attached to the mother. A boy helps his father in multifarious works. Parents love them and they also act accordingly to the expectation of their parents. Boys and girls are liked equally without any discrimination.

Next to family, lineage among the Kutia Kandha plays an important role in uniting the people for several socio-cultural and economic functions. The lineage among them is a corporate group. It is a permanent framework and provides political, jural and ritual status. The importance and significant role of the lineage is unavoidable particularly in birth, marriage, death and other rituals. Among the Kutia Kandhas it is found that same lineage groups may reside outside their own village. The emotional attachment between the lineage members and mutual socio-economic obligations highlight its special characteristic features.

Apart from the lineage, clan among the Kutia Kandhas is quite prominent and unique for its structure and socio-cultural function. It may be accepted that the clan includes a large number of lineages, previously all the clan's man were living in a particular village. But now-a-days multi-clan villages are noticed throughout the area inhabited by the Kutia Kandhas. All the clans men still maintain strong social network among themselves and regarded as brothers and sisters and belong to the same ancestor. Therefore, clan exogamy is the basic rule among the Kutia Kandhas. Particularly, with regard to clan territory and Meriah sacrifice celebration clan members are supported wholeheartedly. Any sexual relationship between the members of the same clan is the greatest social offence and seriously viewed by the community members. Every Kutia Kandha feels pride of his clan and clansmen. In previous days Kutia Kandha villages were uniclan villages but now-a-days due to immigration of other clan's people those have became multi-clan in composition.

The villages inhabited by the Kutia Kandhas are in interaction with each other for several economic, social, religious and political functions. Each village has its own organisation. Each village is a self-contained unit. A Kutia Kandha is overconscious of the rich heritage of his village and intensely feels his belongingness. A village as found among the Kutia Kandha is a cluster of households related to a few lineages. Villages unity for many reasons cannot be overlooked. It brings different individuals and groups of

the village to one fold. All the villages of Belghar Grama Panchayat come under one Mutha. Mutha is an administrative-*cum*-social unit and a Muthadar was acting as the head. He was collecting revenue from the villages on behalf of the king so also all the villages of Gumma Grama Panchayat come under another Mutha.

The Kutia Kandha inhabiting a contiguous area adjacent to Belghar area are an endogamous group. They exhibit same ethnic characters with negligible regional variation. With regards to their physical features, dietary habit, dress and ornaments, language, social habits and belief pattern they are almost the same. This bigger unit as a sub-tribe is one of the major groups of the great Kandha tribe of the State. The Kutia Kandhas show some similarities with other Kandha sub-tribes in regard to language, physical features, belief pattern, adornment, materials used and house and settlement pattern.

Leadership and Political Organisation:

Leadership and political organisation of the Kutia Kandhas highlight the position of leaders, their status and role, various cases and decisions given by the authorities. The political organisation clarifies the functions of the authorities in a particular framework and changes of the traditional council and importance of modern political set up. The leaders may be classified as traditional and modern according to their membership and mode of selection and function. People of the Kutia Kandha community follow with sincerity the established customs and sanctions. They obey politely with devotion the decisions of the authorities who safeguard them and guide them in all possible secular matters. The traditional leadership is hereditary bu' the modern leadership is the achieved one. A leader among the Kutia Kandha may be an active participant both in the traditional as well as modern political council.

The leaders of the Kutia Kandha community are Mutha Majhi, Pat Majhi, Bismajhi and Chhatia. The Jani who is basically the magico-religious head of the village also actively participates in the village traditional political council. All the above posts are hereditary, however, if necessary in unavoidable situation it may differ. The status of the traditional leaders is ascribed rather than achieved. They keep eye over the traditional practices and process of operation.

Mutha Majhi, who is a man from the Paiko caste is locally know as Patra. His role, a long ago was to collect revenue from the people of a 'Mutha' what is comprise of several villages and to pay the same to the king in time. The Pat Majhi is a formal head who was offered a head-gear in the Dashara festival each year. These two persons have control over the Kutia Kandhas so far. Their advices are taken into account. They are called on each important occasions. The Bismajhi who is a Kutia Kandha looks after the traditional, political matters of the village. This post is very prestigious and hereditary. The 'Bismajhi' previously was selected by the 'Mutha Majhi' or King and since then the post is succeeded in family or lineage level. 'Bismajhi' is the costodian of the village subscription and revenue. He plays an important role in giving decisions in secular and monitary matters. His office does not carry any remuneration but a lot of prestige and special status.

The 'Chhatia', who is a man from the pano community serves as a cattle herder-*cum*-messenger. He has a lot of control over the traditional political council and he plays a significant role in decision-making. The 'Chhatia' conveys message, carries news around the village, summons villagers to the traditional council meetting, collects, cash and kind and deposits it with the 'Bismajhi' and also takes cattle of the village for grazing. Without his knowledge no domesticated animals is sold or any crop is disposed of for trading. He also plays the role of a trader and mediator in several socio-economic political and other matters. As and when required he arranges loan for the villagers. According to the Kutia Kandhas he safeguards the interests of the villagemen in all situations. Although he is considered untouchable but his role and status, particularly maneuvoring personality and tactfulness deserve special mention.

Jani, the magico-religious head is also an active participant of the traditional village council. He is the formal spokesman of the village and keeps eye over the happenings and decisions. If needed he intervenes. At the time of any communal conflict and quarrel of matters connected with divinity his words and decisions are sincerely taken into consideration. Every individual of the village pays regard to Jani and his status and prestige determine the dignity of the village in the area.

The Kutia Kandha traditional village council constitutes traditional authorities and eldest male heads of each household of the village. The Bismajhi or Jani, according to the necessity calls the meeting of the village traditional council informing the Chhatia, the village messenger. All the members of the council sit together usually in the evening hours and freely discuss different issues. Although all the members are free to participate in the discussion but final decision is given by the Bisamajhi in connection with secular matters, where as the Jani decides the magico-religious issues. In almost all cases the decision given by the traditional authorities are unanimously accepted. The accused person may be fined out of which liquor is purchased for consumption by all the members of the council. The Kutia Kandhas never given very serious or expensive punishment for minor cases of conflict, quarrel and breach of social law. But in case of adultery, when a girl keeps illicit relationship with the boy of other caste people, when a boy or girl married elsewhere other than a Kutia Kandha, pregnancy before marriage and breach of incest taboos, the persons concerned are fined heavily and undergo a series of retualistic observances and purification. In certain cases, the offender may be excommunicated from the village and community. These cases are decided in presence of the authorities of several villages.

The traditional village council discusses the wide range of topics starting from a quarrel and conflict between two persons up to all feasts, festivals and common socio-cultural matters. It upholds the traditional law, ethics and social harmony.

The traditional leaders in the Kutia Kandha community are wise, helpful, well-behaved, witty and impartial. The traditional council and leaders are day by day losing importance due to introduction of modern political system.

The modern Panchayat system has not brought any immense change in the traditional council structure. The traditional authorities like Bis-Majhi and Jani who are working in the traditional village council are also found to be work with Government officials as ward members in the Panchayat Raj system. Each village is having a ward member as the representative of the village to work with the Government officials for planning and bringing into action the developmental programmes. In many villages well-to-do and conscious Kutia Kandhas are representing as ward members. A ward member exercises full power in deciding issues in connection with developmental activities. He has voice over the matters connected with outside the village. In several villages where the traditional leaders and ward members are different persons are found to be pulling quite well but in some cases they are not satisfied and happy with each other's approach.

However, it is undisputed truth that virtues of the Kutia Kandhas traditional council and traditional leaders should be respected because of their pious intentions and God's incarnation. Attempts should be taken to revive those institutions, where it has lost its importance to keep up real health and happiness of the co-villagers and area and the people as a whole.

Life Crisis Rituals :

A Kutia Kandha from infancy to old age comes across many ups and downs. However, he makes adjustment with the norms and values prescribed by the society. A married woman is expected to conceive. If it is delayed several apprehensions are made in connection with her fertility and future. A pregnant woman is given due prestige in the community. She feels elated because of her productive potentiality.

Pregnancy among the Kutia Kandhas not only pertains the addition of a member to the famiiy but also one of the ancestors is expected to take birth. Either a male or a female, a child birth is believed as the outcome of blessings of the supernatural power. When a woman does not conceive even after years then she is treated with herbal medicines and magical rites. Barrannes is regarded as a stigma hence the concerned woman is looked down upon by the community and family members.

According to the experienced Kutia Kandha woman cessation of menses, giddiness and vomitting tendency are the primary symptoms of pregnancy. It is further confirmed with abdominal protruberance. The pregnant woman has to take sufficient rest and she is prohibited to perform heavy works in order to avoid miscarriage. She undergoes many observances, breaking of which is regarded as serious social offence.

The woman must give birth to her child in her husband's house for which preliminary preparations are made by the family members. An experienced lady of the community conducts the delivery work, however, the husband's presence is a must. In case of difficult delivery the services of magico-religious specialist is utilised. The child and the mother are looked after by the father of the child. He takes a lot of pain and helps the mother and the child in all possible ways. The pollution period is over after one month of the delivery. The mother takes care of herself and that of the baby to the extent it is possible for her taking into consideration the economic condition and social status of her family.

After 3 days of the birth of a child, a 'Siali' leaf is shown in front uttering the names of the ancestors. While uttering the name of a particular ancestor if the child catches hold of the leaf, it is believed that the very ancestor concern is born. Accordingly the child is behaved by the family members and other kiths and kins. One can come across more than one name of an individual given by different kiths and kins. But the name giving ceremony is celebrated by inviting relations both from father and mother's side particularly mothers' brother. Sacrifice of a pig on the occasion is the traditional rule. The magico-religious observances by the family members and enjoyment of traditional drinks are of special montion on the occasion. The child modulates its behaviour in due course of time by learning from the parents, Siblings,kinsmen, villagers, friends and others. He or she develops personality according to the sex and social approval. They acquire sufficient k owledge during the childhood on the environment, culture, people and spirit world, so that subsequently they adjust themselves in the area and culture to lead their future life.

During the pubescent period they behave differently with opposite sex groups. The dormitory life among the Kutia Kandhas influences the socialisation process, personality formation and community life. Sex life is controlled to a greater extent. Illicit relationship and pregnancy of unmarried girls are seriously viewed in the traditional council.

Marriage among the Kutia Kandha is regarded as a sacred institution. Everybody either a male or a female must marry for performance of different functions like sex, Procreation, economic and social obligations. Preliminary arrangements for marriage is done by the parents. As per the tradition initiative normally starts from the boy's side. Marriage by arrangement is the usual practice, however, other type of marraige, like marriage by love, capture, exchange and intrusion are also recorded. Sororate and levirate both are practised. One can marry more than one wife but monogamous marriges are mostly preferred. Marriage within the clan and outside the Kutia Kandha community are strictly prohibited. Either the husband or the wife can divorce in worst situation when he or she is totally unable to adjust.

The normal marriage are followed with extensive as well as expensive ritualistic observances. It is very elaborate and takes about one to two years. As bride price one has to pay rice, wine, buffalo, clothes, brass pots and arrows. In the marriage ceremony starting from the village watchman upto the Jani and family members up to the distant relaitves, villagemen to tribesmen enjoy either the feast or drink but everyone shares in one way or the other. The elaborate processes of the functions deserve special mention to understand the culture and life-style of the Kutia Kandhas. After completion of all marriage rituals the couple are expected to lead a life as per the expectation of the society members. Husband exercises enormous poser over the wife, however, the latter is not looked down upon. If a wife divorces her husband in odd situation her parents have to pay back the bride price as per demand from the hushand's party.

A dead body may be cremated or buried which depends on the nature of death. The porsons died normally are burnt in the cremation ground. But unnatural death cases caused due to small pox, drowning in water, falling from tree, being attacked by the wild animals, different labour, etc., are buried. The pollution period observed by all the lineage men Van is from 3 to 8 days. It depends on the person concerned whose relative died and when he can be ready to celebrate the purificatory ceremony. All the kinsmen are invited, drinks are brewed and buffalo, goats and chickens are arranged in a short period. Apart from magico-religious activities enjoying the ceremonial feast and drink are major observances. According to the Kutia Kandhas the deads live in the house and village in form of spirits and take rebirth in the same family after a generation. Ancestral spirits have important role to play especially in birth, marriage and death ceremonies. They are also responsible to keep better health and happiness of living kins.

Ethos, Ideology and World view

Religion is found to be the hard core of the way of life of the Kutia Kandhas. On one hand, religion centres round multifarious Gods, Goddesses, deities, spirits and various natural objects and on the other hand, it has indepth intimacy with other aspects or their life and culture, like economic, social, political and life-cycle. They are very sincere, dedicated, devoted and dutiful to their religion. Since all the performances are associated with either magical deeds or sacrifice or both it may be considered to redesignate the term religion as magico-religious activities among the Kutia Kandhas. As the Kutia Kandhas believe everything that happens in and around are the deeds of spirits, therefore, in all possible ways they try to appease the spirits and keep them satisfied by offering sacrifices with utmost care.

With a view to understand the Kutia Kandha magico-religious activities, the magico-religious centres, magico-religious specialists and magico-religious performances of the people may be described. In the Kutia Kandha area one can come across certain symbolic structures represented by bamboo poles, wooden frames, notched bifurcated wooden pillars, stones, small huts, raised places having vermilion marks and dry blood spots, places having leaf-cups, leaf plates, bamboo-split made small baskets, sacrificial blood, etc. Each spot is of magico-religious significance. Magico-religious spots are located inside the house, inside the village settlement, within the village boundary and outskirt of the village boundary. Each spot has its own significance because it gives shelter to spirits and deities of certain special power. The first magico-religious centre that attracts the attention of anybody is the place for Dharani Penu represented by three pieces of stones. It is the creator of human being who protects the community, and ensures fertility. Usually the villagers at community level offer sacrifices for health and happiness of their own and there cattle. In the middle of the village one may see a bifurcated notched pillar and at the end of the settlement a very long bamboo with a piece of triangular cloth on its top symbolises the village deity. Its significance is seriously felt at the time of Meriah sacrifice. The village graveyard and

cremation ground are also important places for performance of magico-religious rites. The 'Jhakeri' represents the sun and to Kutia Kandha it is the first inhabitant. If functions of different centers are analysed, it is ascertained that a particular centre may be the sheltering place of one or more deities. They are benevolent and malevolent by nature and sometimes possess both the qualities and treat the people according to the situation. But functions are either to keep health and happiness of the villagers, their property both land and animals and if, dissatisfied turn furious and create troubles and cause maladies. According to the Kutia Kandha spirits are declining their importance with the disappearance of forest and due to lack of sincere devotion of the people towards the spirit world.

In almost every village magico-religious specialists may be considered both at the family and village level. Jani is the magico-religious specialist of the village whereas the Bejuni (Shaman) functions as the family level specialist. 'Jani' performs all the major sacrifices and he is in charge of all magico-religious responsibilities. It is he who keeps better relation between the people and the spirits by satisfying the latter one in the prescribed manner. The Jani is the custodian and transmitter of the magico-religious traditions from generation to generation. One of the striking features of the Kutia Kandha magico-religious activities is the taboo inflicated on the woman and cult of blood. A lot of prohibitions are to be seriously observed by the women, even they are not allowed to touch the sacrificial food and participate in some of the community level magico-religious activities.

The magico-religious performances are associated with several types of sacrifices and observances. It needs blood of animals and birds starting from a pigeon up to buffaloes. Most of the magico-religious performances are followed by music, dance and drinking. The calendar of a number of observances are arranged in such a manner that it gives chance to every individual of a village and different villages together to enjoy. A lot of materials, like small baskets, pots, leaf cups, sun-dried husked rice, powder of red and white colour, turmeric, flower and fruits as per the occasion are some of the requirements apart from the sacrificial animals for the magico-religious performances. The process of observances may vary from complex to simple rites but the general phenomena in usual cases are almost same.

Apart from all above the speciality of the Kutia Kandha magico-religious activities are highlighted in several feasts and festivals. Among the major festival, mention may be made of Meriah sacrifice, Taku Puja, Nuakhia, Punikalia Puja or Semi Puja, Padar Puja, Kaman Puja and others. Meriah festival is the most significant and expensive one celebrated with series of observances and propitiations. This festivals is communally observed mainly to appease the Darni Penu. Previously a human being was offered for sacrifice but now-a-days a buffalo is taken as substitute. Although on community level one or two buffaloes are sacrificed but on family level different birds and animals, like pigeon or chicken, goat, etc, are offered in the name of several spirits well-known for specific function. The socio-cultural interaction, bond of friendship between clans and villages and feeling of oneness between groups are projected in different phases of the observation. This very costly sacrifice is observed by the villagers in the gap of three to five years which may vary according to the specific situation and indication of the spirits and diviners.

Beliefs and practices concerning life-cycle, agricultural operation, house construction, food-gathering and hunting, use of musical instruments and to satisfy uncounted deities are some of the special features of Kutia Kandha magico-religious activities. Pollution and sickness are also linked with magico-religious activities. Auspicious and inauspicious signs, taboos and social control, personal behaviour and personality formation, production and consumption andmany others are significantly influeuced by the magico-religious actiivities of the Kutia Kandhas. Even accidental and unnatural deaths are related to divinity.

The ancestors of the Kutia Kandhas are treated like living beings. They are remembered in all important occasions. No Kutia Kandha in general dissatisfies the ancestral spirits.

The sorcery and witchcraft are two dreaded aspects for the Kutia Kandhas. A sorcerer and person dealing with black magic are feared by all the social beings The spiritual foundation among the Kutia Kandhas is so strong it overrides all other aspects of human life. However, magico-religious activities are found very helpful in keeping the Kutia Kandhas together. Establishment of peace and maintenance of social harmony and controlled behaviour of the groups are possible so far because of strong practice of magico-religioue rites.

Education and Enculturation

The traditional form of education and the knowledge gained by the Kutia Kandhas need to be emphasised for development of their area and people. The pattern of education which they have induced has very little relation with schooling. Their fore-fathers, elderly experienced people, social and cultural experts and traditional trainers and senior relations teach them non-formally about the behaviour pattern, social mores, scientific traditional techniques for socio-economic gains, and many others that help in leading a free, independent and happy life. In the learning process they inherit those knowledge and acquire certain capabilities which can be useful for ownself, family, village and tribesmen. They aim at material or spiritual gain while undergoing special training. They laugh and keep laughter in other's lips. They enjoy out of other's enjoyment. In the educational process they are helped by others and always get ready to help others. According to their age, sex, family status, and age-old traditions, each individual is expected to behave in a particular pattern. He learns certain things quite non-formally within the time stipulation and without any payment. The knowledge and specific techniques are inherited from generation to generation and that is an on going process. Starting from very early childhood up to the adulthood one observes social practices, tought non-formally and learns by virtue of experiences. The striking feature of the Kutia Kandha people is that they never punish the children. Love, affection and repeated er deavour of the parents enable the children to develop desired personality. That does not mean that the children are not warned for their faults but they are never taunted or irritated. One may observe that the children are not very free to the outsiders. But with all matters of respect, regard and manners they are very perfect towards their kinsmen, villagers and tribesmen. They learn in all stages of age and activities, at home and in the field, inside the village and outskirt of the area. The receptivity of the Kutia Kandhas and their balanced thought process enriched their cultural heritage. Major fields or areas where an individual involves himself in the learning process are forest, field, inside house, at bathing ghat, youth dormitory, on the way to or inside the market, centre for magico-religious performance, village street, communal gathering and many others. Individuals like parents, senior members of the family, village political, magico-religious and other leaders, secular head, village Domb cattle herd and very often senior friends are traditional trainers. Whenever they learn something new they veryfy and experiment in due course before practical application. Anybody repeats the same mistake is tought, then warned and subsequently reprimanded. At last the act of reconciliation works. without any written document the Kutia Kandhas remember many things about their songs, music, dance, medicine, techniques, process of management and several others. Each individual is found as a good trainee before adulthood but afterwards he behaves and acts like a master.

The Kutia Kandhas are very straight forward people. But they only expose their feelings before the people with whom they have confidence. Once they accept somebody means it is from the core of the heart. If they love, then love wholeheartedly. Any outsider may not be accepted by them. They study very deeply

and only when convinced then come closer and mix without inhabitions. All of a sudden one may misunderstand the Kutia Kandhas as over simple, sober and less intelligent. But it takes sometime to assess them properly. The Kutia Kandhas are very much traditional and word-bound people. They do what they commit and they commit what they accept something which has social and indigenous divine approval. They are quite faithful and honest to their friendship. They are trustworthy and get ready to give life for the friends. Their land, people Gods and Goddesses and spirits are most precious for them. A Kutia Kandha rarely tolerates anything against self-dignity. The Kutia Kandhas believe in broad kinship range and group life. Oneness feeling are group life are basic features of the Kutia Kandha.

They enjoy the life to the possible extent. They are very free and frank to the known persons and spontaneous in action. One can easily recognise their fellow feeling and bravery. They are good hosts and try to satisfy the guests in all possible ways. A Kutia Kandha never gets angry with someone and begs before anybody if he is faulter. He believes in work and worship. They trust the Dombs, people of a Scheduled Caste Community. The Kutia Kandhas never disregard or misbehave anybody unless they are very seriously hurt. They believe in love and affection, excuse and forgiving, help and tolerance. They dislike cheats, mischief-mongers, characterless and ill-tampered person. They are afraid of evil spirits, black magicians, sorcerers and touts having long hands with the Govornment officials.. The Kutia Kandhas are disciplined people and bear high sense of morality. They respect elders and love youngers. Physical punishment and use of taunting remarks to somebody are the worst means for sorting out any problem. They never like persons having stealing and begging habit. They are very innovative and imaginative. They believe more in equality than individual status symbol. They are very sympathetic and helpful at the time of danger. They may tolerate anything but not against their land, people, spirits and culture.

According to the Kutia Kandhas production in land and forest, fertility at home and upkeeping of health and happiness can only be possible by establishing good relationship with the spirits, villagemen and kinsmen. Sickness or any danger to a family is due to some errors committed by the fellowmen. Ultimate way is to keep the spirit world in good humour by offering regular sacrifice as per prescribed norms.

The Kutia Kandhas think it is a sin not to marry a girl making her pregnant. To them, he is bad who does not take care of his parents after marriage and who takes things and does not give back. They do not like such persons who do not treat the guests well. They invite them on ceremonial and festive occasions. Acceptance of Christianity and not appeasing the spirits , are regarded as vicious deeds.

To keep the seniors happy, to boost a man morally, and help economically when someone is in trouble, are some of the virtuous deeds for the Kutia Kandhas.

They expect the Government officials should not demand bribe, exploit them, debar them from their rights on forest and land, book cases against them and interfere in their personal and magico-religious matters.

CHAPTER III

EMPLOYMENT, INCOME AND EXPENDITURE

Introduction

An attempt has been made in this chapter to assess the magnitude of employment/unemployment, income/expenditure, savings/loans, etc., of the Kutia Kandha people in order to gain a comprehensive knowledge about their economic condition. For arriving at income from cultivation (settled/shifting) particulars regarding land-holdings, cropping pattern, cost of cultivation, agricultural production, yield rate, money-value of produce, etc., have been dealt with in detail. The analysis is based on the data collected as per the schedule designed for the purpose from all the 108 households of 7 sample villages administering stratified simple random sampling method. While collecting data in the field, some impediments have been encountered due to communication gap. As a result, for example, accurate conversion of the size of land holdings or yield rates expressed in indigenous terms could not be possible.

However, care has been taken to elicit the required information as far as possible from them with the help of local interpreters and by cross-checking the data with their neighbours.

Employment

Agriculture including shifting cultivation is the major occupation of the Kutia Kandhas. They raise different crops in the plain lands available at the foot hills and through swidden (Podu) cultivation in the hill slopes during rainy season. The work starts in June and continues till December. Besides, they collect minor forest produces throughout the year and hire out labours for some days in each month. All the persons (296) in the working age-group (15—59 years) and about a half of the children below 15 years (83 out of total 159) are engaged in these economic activities. They constitute about 79 per cent of the total population (480). Villagewise details may be seen from Table 3·1. All these persons do both wet and shifting cultivation, hire out labour and collect minor forest produces. Besides, they are also engaged in some other work like small business, hunting, etc.

Data regarding average hours of work put by a working person in different activities monthwise are presented in Table 3·2. These data show that on an average working person is engaged for 2036 hours (255 days) in various productive works in a year. He does not find any work for 544 hours (68 days) and is engaged in unproductive works for 340 hours (42 days) in a year. If availability of work for 270 days is considered as full employment, it appears that a Kutia Kandha is almost fully employed.

However, the maximum period of engagement is devoted to the collection of forest produces (938 hours or 116 days) and shifting cultivation (590 hours or 74 days). He attends to such works in the absence of alternative employment which ensures better income. As such, this type of employment involves a lot of disguised unemployment. He gets better income from wet cultivation and wage earning where he devotes less time (47 days and 18 days respectively) due to lack of scope of employment in these fields.

Monthwise analysis of employment situation indicates that there is not much difference in the average hours of work put by a working person in different month. This is because of the fact that when no agricultural work is done during the month of January to March, they spend more hours in the collection of forest produce.

With regard to salaried employment in the organised sectors, no person in the sample villages is found to have got a job. As such they have not taken so far the advantage of reservation of jobs in Government and other organised sectors for tribal people. This is due to lack of educated persons in the area.

Income

Cultivation (shifting/settled) is the main source of income of Kutia Kandha people. It is, therefore, important to find out the area cultivated by them under different conditions, cropping pattern, quantum of produce received etc. before coming to money return from this source.

Area cultivated—The survey reveals that on an average a Kutia households cultivate an area of 0·885 hectares at the foot-hills, out of which 0·411 hectares are low land and the rest 0·474 hectares are high and medium lands. Besides, the average area put under shifting (Podu) cultivation per household is estimated at 1·126 hectares. But this area fluctuates from year to year due to the nature of cultivation. Out of the total 108 households in the sample villages, 23 have no land, 54 own land up to 1 hectare, 24 between 1 and 2 hectares and only 5 household possess land above 2 hectares at the foot-hills. Since land resource at the disposal of Kutia households at the foot-hills, is scarce, they practise shifting cultivation in the hill slopes. Another important reason is that these people get some cash crops through Swidden cultivation which they cannot produce at the low land. No irrigation facility is available in any of the sample villages. Villagewise information on different types of land put under cultivation is furnished in Table 3·3.

Area under different crops—On an average maximum area per household is put under paddy (0·411 hects.) followed by ragi (0·333 hectares) and maize (0·141 hectares). While paddy is raised in the entire low land, ragi and maize are grown in the high and medium land. A number of crops, namely jhudunga, kattinga, ragi, kangu, castor, til, suan, kandula, kada, mustard and niger etc. all mixed, are raised under shifting cultivation. Since the land under Siwidden cultivation has not been surveyed and it changes from year to year the area under a particular crop cannot be ascertained. The details are presented in Table 3·4.

Agricultural production—The villagewise information on produce of cultivation received by Kutia Kandha households and money value of these products are furnished in Table 3·5. The average figure for all households are given below:—

Name of the crop	Production of crops received per household (9th)	Value of produce received per household (Rs.)
(1)	(2)	(3)
Paddy ..	5·6	784
Ragi ..	2·9	580
Maize ..	1·5	300
Vegetables ..	0·5	100
Pulses ..	0·7	420
Oil seeds ..	1·2	840
Total ..	..	3,024

The production of paddy and other cereal crops per household is very low and by this the Kutia Kandha households meet their food requirements for about 6 to 7 months. For rest of the period they depend on the collection of minor forest produce. They do not generally sell cereal products and vegetables because they utilise them for the home consumption. Only a limited quantity of pulses and almost the entire oilseed crops are sold to meet cash requirement of the family. Since these cash crops are raised in swidden plots they continue to practise swidden cultivation inspite of various measures taken by Government to disuade them from this.

On an average, the total value of produce per household is estimated at Rs. 3,024. The figure is much lower for the two sample villages. It is quite difficult to maintain a family in these hard days with such a low income from cultivation which is the mainstay of economy of the Kutia Kandha.

Yield-rate—The yield-rate of different crops calculated for different sample villages are given in Table 3·6. On an average, the per hectare yield of paddy is 13·6 quintals and that of Ragi and maize, 10 quintals and 10·3 quintals respectively. The yield-rate of paddy is lower than that of Phulbani district average (16·36 hect.) and State average (18·15 Qtls./Ha.) in 1988-89 and Tumudibandh block average (15·04 Qtls./Ha.) in 1990-91. The yield-rate of maize is also a little lower than the State average (11·57 Qtls./Ha.). However, the yield-rate of ragi in the area is almost same as State average (9·80 Qtls./Ha). The reasons for low yield of paddy in the area, are (i) cultivation in undulating rocky lands, (ii) lack of irrigation facilities, (iii) ignorance of farmers about package of practices, etc.

Wage Earning—Currently, it is observed that they are also engaged as wage-earners on non-agricultural activities such as construction of roads and buildings. But these economic pursuits do not ensure them adequate employment opportunities. In the sample villages persons from 87 households out of the total 108 (80·6 per cent) are found to have been engaged as daily wage labourers during the year 1990. In total, 173 persons comprising 92 males (54·7 per cent) and 81 females (45·3 per cent) are engaged as wage-earners during the year.

The average number of days engaged in wage earning and average amount of wages received per household during the year come to 62·7 days and Rs. 601 respectively. Thus, the wage rate received by them, i. e., about Rs. 10 is lower than the minimum wages fixed by Government, i. e., Rs. 25 per day. This is due to the low paying capacity of farmers and there is limited opportunity for alternative wage employment in the area. Villagewise details may be seen from Table 3·7.

Animal Husbandry—Almost all Kutia Kandha households in the sample villages have kept domestic animals and birds. The survey Table 3·8 reveals that there are 101 cows, 105 bullocks, 29 buffaloes, 152 pigs, 151 goats and sheep and 286 poultry birds in 108 households in 7 sample villages. These animals and birds are not given any manufactured feed. They graze in the forest and pasture lands. Very little time is devoted by the households members for up keeping the animals.

The animals and birds are kept only for meat purpose. During the performance of ceremonies, festivals, rituals and on arrival of relatives these animals are killed and eaten. The bullocks and cows are also utilised for cultivation purpose. Since the animals are maintained by the households and consumed at home, the expenditure and income from animal husbandry have not been assessed.

Collection of Minor Forerst Produce—The Kutia Kandha people remain engaged in the collection of minor forest produce throughout the year. They get some type of food materials, namely 'Kanda' an edible root, edible bamboo shoots, leaves, fruits, flowers, honey, mushrooms, etc., in different seasons. They make up the deficiency of food requirement by collecting these materials. Besides, they collect fuel, fodder and construction materials from forest. But their dependence on forests is gradually declining due to depletion of trees and plants owing to the practice of shifting cultivation. Since all forest collections are consumed at home and respondence were unable to report about the quantities and prices of these materials, it is not possible to assess the total income from minor forest collections.

Income—The total income of the Kutia Kandha households consists of the receipts from cultivation(settled/shifting), wage earning and the collection of minor forest produces. In this study income from animal husbandry and collection of minor forest produce have not been included as expenditure has not been incurred in these items and they have been specifically used for home consumption.

On an average the total income of a Kutia Kandha family per annum comes to about Rs. 3,845 in the sample villages. The village, Sanakumudi is the only exception where income per household is more than double the average amount. This is because of the fact that one of the 6 households in this village belongs to a very big farmer. Out of the total family income 78·7 per cent comes from agricultural produce alone. In income from wage-earning and collection of minor forest produce constitute about 15·6 per cent and 5·7 per cent respectively of the total income. Thus, Kutia Kandha people solely eke-out their living by practising cultivation, both shifting and settled and it is the main indicator of the primitiveness of the community. The villagewise details may be seen in Table 3·9.

Further cut off point for households income at poverty line level was fixed at Rs. 6,400 in the biginning of Seventh Plan for rural areas. Taking price rise into consideration this will be of the order of Rs. 8500 at the end of Seventh Plan. Compared to this the average total income per household in the sample villages is substantially lower. This shows that all Kutia Kandha households in the area except a few are below poverty line.

Expenditure

Total and Item-wise Expenditure—Data regarding avarage expenditure incurred per household per year for the sample villages are furnished in Table 3·10. The table reveals that on an everage a Kutia Kandha household spends an amount of Rs. 4,367 per year. Of this a lion's share (89 per cent is spent towards consumption expenditure and the rest (11 per cent) is spent production of crops and acquiring of domestic animals.

Food items account for 59 per cent of the total consumption expenditure. Other items with high expenditure are liquor and tobacco (15 per cent), clothing (12 per cent) and expenditure on ceremonial and religious purposes (7 per cent), Kerosine absorbs 3 per cent and each of the items like medicine, gifts, house-repair and others account for 1 per cent of the consumption expenditure. The expenditure incurred on education is negligible. The *per capita* monthly consumption expenditure is one of the important indicators of the general economic development of a particular area. It works out to only Rs. 73 per cent for the sample villages. This is lower than the average total monthly *per capita* consumption expenditure in rural Orissa as observed in 44 round N.S.S. taken up for the period 1988-89 (Rs. 147·34). The figure for 1990-91 will be still higher in the cantext of galloping rise in Prices. As such the standard of living of Kutia Kandha people is perceptibly low.

Indebtedness/Savings—Particulars about savings if any after meeting the total expenditure and loans outstanding against Kutia Kandha households village wise are presented in Table 3·11. It would be seen from the table that only in one village, Sanakhumundi, a surplus of about Rs. 3,000 is found because one big farmer inhabits in that village. In another village, Burlubaru, the income and expenditure are well balanced. In all other villages there is a negetive balance varying from (—) Rs. 835 to (—) Rs, 1,859. People are thus depending on loans almost fully for meeting the deficit in expenditure. They get loans mostly from the Panos, the local money lenders. Some are however, taking loans from co-operatives and commercial banks. On an average the balance amount and loans per household in the sample village stand at (—) Rs. 522 and Rs. 664 respectively.

Directorate of Economics & Statistics, C. S. Branch— Government of India (State-cell) have delinated the per hectare total cost of cultivation of paddy in Orissa during 1984-85 at Rs. 2,811. However, operational part of this cost is Rs. 1,783. If human labour component is excluded, this comes to Rs. 860 which is about three times the cost incurred by the Kutia Kandha households. Again this will be much higher at present if price rise is taken into consideration.

Cost of Cultivation—Cost of cultivation is the major production expenditure incurred by the Kutia Knadha people. It is therefore felt necessary to find out the cost of cultivation of different crops as well as the amount spent on cultivation per household.

The data regarding cost of cultivation of different crops per hectare and per household in the sample villages are shown in table 3·12. These figures exclude imputed value of household labour and value of seeds and fertilisers supplied by K.K.D.A. on 100 per cent subsidy. Since members of Kutia Kandha families are engaged in cultural operation of different crops on the same day, they are unable to indicate the actual number of days of household labour utilised for a particular crop. As such the cost of cultivation in this table includes cost of animal labour, wages paid for hired labour and the value of seeds, fertiliser and manures used by the respondents from their own source.

On an average the cost of cultivation incurred by the Kutia Kandha households for different crops is as under.—

Crops	Cost of cultivation (Rs.)	
	Per hectare	Per household
(1)	(2)	(3)
Paddy ..	294	121
Ragi ..	222	74
Maize ..	227	32
Mixed cropping ..	200	225

The per hectare cost of cultivation tends to be very low compared to that under package of practices and that incurred in plains for the respective crops.

The main reasons for low cost of cultivation may be as follows :

(1) The lands are highly undulating and rocky and as such these are not comparable with those in the plains :

(2) The prevailing wage rate in the area is lower (Rs. 10/—) than the minimum wage fixed by the Government i. e., per day Rs. 25/—), (3) lack of irrigation facility. (4) fgnorance of the farmers regarding package of techniques (5) lack of marketing facilities (6) application of inadequate doses of fertiliser, insecticides, etc.

Some respondents in course of interview indicated that they are selling the fertilisers received from K. K. D. A. to other persons at low rates as they do not have lands at foot-hills.

However, the Kutia Kandha farmers are gradually showing interest in learning about the modern methods of cultivations. Most of them are using manures and chemical fertilisers. About half of the respondents are using HYV paddy seeds. The K. K. D. A. is playing a key role in pursuading them to adopt the method through supply of inputs on 100 per cent subsidy and demonstration.

It is further observed from the table that almost all the respondents including those who have no or little land at the foot-hills are engaging outside labours, The landless persons also engage hired labour in shifting cultivation during peak period of operation.

Although the cost of shifting cultivation per hectare is less than that in foot-hills (settled cultivation), the result is reverse in case of cost of cultivation per household. This is because of the fact that the Kutia Kandha households cultivate more areas in hill slopes than in foot-hills.

TABLE 3·1

Occupational Structure in Sample Village

Sl. No.	Name of the sample village	Total No. of households	Total population	Main occupation	Subsidiary occupation
(1)	(2)	(3)	(4)	(5)	(6)
1	Sanakumudi ..	6	27	Cultivation settled/shifting,	Agril. labour, collection of minor forest produce, A.H.
2	Tidipadar ..	8	33	Ditto	Ditto
3	Adalangu ..	7	34	Ditto	Ditto
4	Randangh ..	22	96	Ditto	Ditto
5	Karanjikana ..	15	80	Ditto	Ditto
6	Dhumamaska ..	21	90	Ditto	Ditto
7	Burlubaru ..	29	120	Ditto	Ditto
	Total ..	108	480	..	..

No. of workers engaged in both 15 years						Total (Adult+children)			Remarks
Adult (15 to 59 years)			Children (below)						
M	F	T	M	F	T	M	F	T	
(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
10	9	19	1	1	2	11	10	21	
13	12	25	2	1	3	15	13	28	
8	10	18	4	4	8	12	14	26	
25	30	55	13	10	23	38	40	78	
24	23	47	8	8	16	32	31	63	
22	31	53	7	7	14	29	38	67	
43	36	79	11	6	17	54	42	96	
145	151	296	46	37	83	191	188	379	

TABLE 3·2

Monthwise average hours of employment per working person in the sample village, 1990

Sl. No,	Month	Hours engaged in (from 9 A. M, to 4 P, M,)							
		Wet cultivation	Shifting cultivation	Wage earning	Forest collection	Others	No work	Total hours @ shows per day	Total days
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	January ..	..	..	16	127	66	39	248	31
2	February ..	...	...	16	114	65	29	224	28
3	March ..	...	..	16	121	77	34	248	31
4	April ..	23	71	8	74	49	15	240	30
5	May ...	21	65	8	75	47	32	248	31
6	June ..	51	77	8	51	33	20	240	30
7	July ..	69	70	8	47	26	28	248	31
8	August ...	52	78	8	47	36	27	248	31
9	September ..	55	66	8	55	30	26	240	30
10	October ..	16	54	16	67	50	45	248	31
11	November ..	50	68	16	62	27	17	240	30
12	December ..	37	41	16	88	38	28	248	31
	Total ...	374	590	144	928	544	340	2920	365
	Percentage to be hour ..	12·80	20·21	4·93	31·78	18·63	11·68	100·00	..
	Average no. of days engaged during year.	47	74	18	116	68	42	365	..

TABLE 3·3

Area cultivated by the households in the sample villages

Sl. No.	Name of the sample village	No. of household	Average area cultivated per household (in Hect.)			
			At foot-hills (settled cultivation)			
			Irrigated	Un-irrigated		
				High	Medium Low	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	Sanakumudi ...	6	..	2·240	0·733	2·973
2	Tidipadar ...	8	..	0·262	0·603	0·865
3	Adalangu ..	7	..	0·200	0·571	0·771
4	Randang ...	22	...	0·378	0·390	0·768
5	Kranjikana ..	15	..	0·440	0·487	0·927
6	Dhumamaska ..	21	..	0·151	0·129	0·280
7	Burlubaru ..	29	..	0·559	0·434	0·993
	Total ...	108	..	0·474	0·411	0·885
		(100)	..	..	..	..

Sl. No.	Name of the sample village	Cultivation on hill-slopes shifting cultivation	No. of households possessing land at foot-hills				Practising shifting cultivation
			With no land at foot-hills	Up to 1 ha.	1 ha. to 2 ha.	2 ha. & above	
(1)	(2)	(8)	(9)	(10)	(11)	(12)	(13)
1	Sanakumudi ..	1·333	2	1	...	3	6
2	Tidipadar ...	1·150	...	4	4	...	8
3	Adalangu ...	1·371	..	7	..	..	7
4	Randang ..	1·055	6	9	6	1	22
5	Kranjikana ...	1·147	..	10	5	..	15
6	Dhumamaska ..	1·143	12	7	2	..	21
7	Burlubaru ..	1·048	3	16	9	1	29
	Total ...	1·126	23	54	26	5	108
		...	(21)	(50)	(24)	(5)	(100)

TABLE 3·4

Area put under different crops per household in the sample villages in K.K.D.A. area

Sl. No.	Name of the sample village	No. of households	Area under crops per household in hectares			
			At foot-hills			On hill-slpos
			Paddy	Ragi	Maize	Mixed cropping (Jhudunga, Katinga, Castor, Niger, etc.)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	Sanakumudi ..	6	0·733	1·800	0·440	1·333
2	Tidipadar ..	8	0·603	0·202	0·060	1·150
3	Adalangu ..	7	0·571	0·160	0·040	1·371
4	Randang ..	22	0·390	0·225	0·153	1·055
5	Kranjikana ..	15	0·487	0·350	0·090	1·147
6	Dhumamaska ..	21	0·129	0·100	0·051	1.143
7	Burlubaru ..	29	0·434	0·350	0·209	1·048
8	All households ..	108	0·411	0·333	0·141	1·126

TABLE 3·5

Agricultural production and value of produce per household in the sample village

Sl. No.	Name of the sample village	Item	Low land paddy	Production of crops per household			Hill slope (Podu-cultivation)		Total value of produce per family
				High and medium land			Pulses	Oil seeds	
				Other Ragi	Cereals Maize	Vegetables Beans, Pumpkin, etc.	(Jhudunga, Katinga, biri, kandula, etc.	(Mustard, Til, Alasi, Castor, etc.	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
			Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1	Sanakumudi ..	Production (Qtls.) ..	9·8	12·0	4·0	0·4	0·7	2·5	..
		Value ..	1,372	2,400	800	80	420	1·750	6,822
2	Tidipadar ...	Production (Qtls.) ..	9·0	0·5	0·6	0·8	0·4	1·2	..
		Value ...	1,260	500	120	160	240	840	3,120
3	Adalangu ..	Production (Qtls.) ..	9·0	2·2	0·3	0·2	0·5	1·9	..
		Value ..	1,260	440	60	40	300	1,330	3,430
4	Randang ..	Production (Qtls.) ...	5·3	2·3	1·7	0·6	0·9	0·6	..
		Value ..	742	460	340	120	540	420	2,622
5	Kranjikana ..	Production (Qtls.) ...	6·6	4·0	1·0	0·4	0·1	1·7	..
		Value ...	924	800	200	80	60	1,190	3,254
6	Dhumamaska ..	Production (Qtls.) ..	2·0	1·2	0·5	0·5	0·6	0·6	..
		Value ..	280	240	100	100	360	423	1,500
7	Burlubaru ...	Production (Qtls.) ...	5·3	2·4	2·2	0·3	1·1	1·3	..
		Value ...	742	480	440	60	660	910	3,292
8	All households ...	Production (Qtls.) ...	5·6	2·9	1·5	0·5	0·7	1·2	..
		Value ..	784	580	300	100	420	840	3,024

TABLE 3·6.

Yield rate of principal crops in the foot-hill lands in the sample K. K. D. A. villages.

Sl. No.	Name of the sample village	No. of households	Yield (in quintal) per hectare of land		
			Paddy	Ragi	Maize
(1)	(2)	(3)	(4)	(5)	(6)
1	Sanakumudi ...	6	13·4	6·7	9·1
2	Tidipadar ..	8	14·9	12·4	10·0
3	Adalangu ..	7	15·8	13·8	7·5
4	Randang ..	22	13·6	10·2	11·1
5	Kranjikana ..	15	13·6	11·4	11·1
6	Dhumamaska ..	21	15·5	12·0	9·3
7	Burlubaru ..	29	12·2	6·9	10·5
	Total ..	108	13·6	10·0	10·3

TABLE 3·10

Particulars about expenditure incurred in different items by the Kutia Kandha households in the sample village

Sl. No.	Name of the sample village	No. of house-holds	Average expenditure incurred per household per annum (in rupees)					
			Food	Clothing	Kerosene	wine & tacacco	Medi-cine	Educa-tion
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	Sanakumudi ..	6	2,530	600	160	645	45	..
2	Tidipadar ..	8	2,085	585	106	656	42	15
3	Adalangu ..	7	2,400	531	128	814	53	..
4	Randang ..	22	2,041	475	112	593	49	..
5	Kranjikana ..	15	2,420	344	160	902	40	..
6	Dhumamaska ..	21	2,343	611	105	404	52	6
7	Burlubaru ..	29	2,307	348	128	388	59	6
	Total ..	108	2,277	467	124	566	51	4
			(59)	(12)	(3)	(15)	(1)	..

Average expenditure incurred per household per annum (in rupees)							
Ceremonial & religious	Gift	House repair	Others	Total	Purchase of animals	Culti-vation	Grand Total
(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
260	35	52	33	4,360	25	725	5,110
300	37	65	45	3,936	30	497	4,463
211	41	85	30	4,293	44	538	4,875
243	30	42	32	3,617	35	522	4,174
232	36	46	41	4,221	46	428	4,695
317	40	35	35	3,948	25	335	4,308
280	36	63	43	3,658	23	406	4,090
269	36	52	38	3,884	31	452	4,367
(7)	(1)	(1)	(1)	(100)			

TABLE 3·11

Particulars about the surplus Income and Expenditure deficit in the Kutia Kandha households in the sample villages

Sl. No.	Name of the sample village	No. of families	Total income incurred per H. H. per year from all sources	Total expenditure incurred per H. H. per year on all items	Balance amount left per H. H.	Loans outstanding per household (in Rs.)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	Sanakumudi ..	6	8,079	5,110	(+)2,969	167
2	Tidipadar ..	8	3,462	4,463	(—)1,001	791
3	Adalangu ..	7	3,885	4,875	(—)990	614
4	Randang ..	22	3,339	4,174	(—)835	764
5	Kranjikana ..	15	3,745	4,695	(—)950	680
6	Dhumamaska ..	21	2,449	4,308	(—)1,859	1,338
7	Burlubaru ..	29	4,122	4,090	(+)32	172
	Total ..	108	3,845	4,367	(—)522	664

TABLE 3·12

Cost of cultivation of different crops raised by the Kutia Kandha per hectare and per household

Sl. No.	Name of the sample village		Cost of cultivation (in Rs.) Paddy	Ragi	Maize	Mixed crops in shifting cultivation	Total	No. of H. H. using HYV paddy seed	No. of H. H. using Outside labour
(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	Sanakumudi	PHh. ..	142	323	78	182	725	4	6
		PHt.	194	179	177	137	...	..	..
2	Tidipadar	PHh. ..	147	58	14	278	497	8	8
		PHt.	244	287	233	242	..	..	..
3	Adalangu	PHh. ..	156	48	8	326	358	6	7
		PHt.	273	300	200	238	...	..	..
4	Randang	PHh. ...	147	57	37	281	522	9	22
		PHt.	377	253	242	266	..	..	..
5	Kranjikana	PHh. ..	130	72	17	209	428	12	15
		PHt.	267	206	189	182	..	...	..
6	Dhumamaska	PHh. ...	37	28	11	259	335	3	21
		PHt.	287	280	216	227	..	..	...
7	Burlubaru	PHh. ...	138	81	53	137	409	10	29
		PHt.	318	231	254	131	...	..	..
	Total ..	PHh. ...	121	74	32	225	452	52	106
		PHt. ..	294	222	227	200	..	..	..

N. B.—PHh. Per household
PHt. Per hectare

CHAPTER IV

Techno-economic Survey in different Sectors for Sustainable Development

Forests

The Project area (KKDA) is well-forested and forms part of the Bolghar Range of Balliguda Forest Division in the district of Phulbani (Orissa). Total estimated forest area is 23628·51 hectares which is about 78·76 per cent of the total geographical area of the project.

Categorywise break up of the forest area is given under :—

(*i*) Reserved Forests ... 10648 hectares (35·5% of total land area)

(*ii*) Proposed Reserves (Not yet notified). 4948·75 hectares (14·8% of total land area)

(*iii*) Other Forests (Revenue land with forest). 8031·76 hectares (28·7% of total land area)

According to the classification by Champion and Seth, in their "Revised Survey of the Forest Types of India "(1962) these forests come under the category "Northern Tropical Moist Deciduous Forests (Sub-group 3C-North Indian Moist Deciduous Forests). The recognisiable sub-types are different forms of the "Moist Peninsular Sal Forests", in which as the very name suggests, Sal forms the most predominant crop, almost pure on favourable sites. The quality of Sal, especially in valleys, is very good. Growth of trees is luxuriant producing timber of very high quality. Important associates of Sal in this area are Terminalia tomentosa (Asan), Anogeissus latifolia (Dhaura), Pterocarpus marsupium (Piasal), Zagerstroemia parviflora (Sidha), etc.

Forests play a very important role in the economy of the area and the tribals depend on these forests almost entirely for their livelihood. In fact, their relationship is truely symbiotic. The chief marketable products of the area are timber, firewood, bamboos and several important minor forest produce (MFF) such as, Kendu leaves, Siali leaves, Siali fibre, Tamarind, Mahua flowers and fruits, Sal seeds, Broom stices, etc. The tribals also extract several edible roots, and fruits which they consume. They collect minor forest produce from the forests free of cost and sell them in the market. Mahua and Salap (Caryota urens) trees are of special importance to them, being chief source for supply of their alcoholic drinks. Timber and fuelwood coupes which were hitherto being worked by the Orissa Forest Development Corporation are no longer worked on account of ban on felling of trees imposed by the State Government all over the district.

The area is still rich in wild life, despite large-scale destruction of their habitat and poaching. Occasional tigers, leopards, Sambar, Cheetal are common. Elephants are found in herds. A number of birds and reptiles can be seen.

The entire terrain being hilly and highly undulating, the importance of a good forest cover to protect the soil and conserve water needs no overemphasis. The project area forms the catchment of two major river-systems of the State, namely the "Mahanadi" and "Bansdhara" rivers. Therefore, the importance of the forest cover can be easily imagined.

Podu—While the dependence of the tribal population on forests is so great, yet these forests are also subjected to ruthless destruction by way of the "slash and burn" system of agriculture, commonly known as Podu which the tribals

(and other residents of the area) resort to in the absence of any other means of livelihood. According to figures furnished by the Forest Department, nearly 17 per cent of the forest area is seriously affected by "Podu", the break up being as under:—

(*i*) Reserve Forests	..	1,200 hectares or 11%
(*ii*) Proposed Reserve	..	2,300 hectares or 46%
(*iii*) Other Forests	..	500 hectares or 6%
Total	..	4,000 hectares

It is worthwhile examining as to why the tribal persists with this age-old practice of "Podu" which has very adverse impact not only on the environment, but also ruins the very soil on which the tribal depends for his survival. The following observations made by experts after detailed research are pertinent :—

(*i*) The tribal takes to shifting cultivation out of sheer compulsion, in the absence of anything else to fall back upon.

(*ii*) Hardly 15 per cent of all crops raised by him yield any positive return to the shifting cultivator and in most cases, the value of the crop yield is less than 25 per cent of the labour and inputs involved in producing the crop.

(*iii*) The shifting cultivator would definitely earn more, if he is provided daily labour on approved minimum wages for any work in which he can be employed.

(*iv*) It is not the tribal (Kutia) alone who takes to shiting cultivation, non-tribals of the area are also engaged in this practice.

(*v*) In almost all cases, the trader-exploiter has a definite vested interest in forcing the tribal to stick to the precarious means of livelihood. The tribal's weakness for liquor, coupled with abject poverty and illiteracy keeps him tight in the trap.

(*vi*) The tribal can definitely be weaned away from this pernicious practice, provided he is given proper assistance and encouragement because no one can ever claim greater love and affinity for the forests, than the tribal.

Further details of this aspect of the problem, and possible solutions are given elsewhere in this report.

PART I

BASIS OF PROPOSALS

The entire economy of the Kutias revolves round the forests, shifting cultivation being the main economic pursuit of most of them. According to information furnished by the K. K. D. A. authorities, out of a total 1,545 families in the project area, 1,200 families (including 520 non-tribal families) depend on shifting cultivation, for their livelihood. Collection of various items of minor forest produce from the neighbouring forests provides the rather negligible supplement to their meagre income. Gross illiteracy is the next important bane of these tribal people.

The poverty and miseries of the helpless tribal people are further accentuated and perpetuated by systematic and constant exploitation by the traders and middle-men, e. g., the Pano (Dom), the Sundhi (Liquor vender) and the Kumuti (traders). As a result, the average Kutia is in e state of permanent bondage to these exploiters who have a distinct vested interests in keeping the Kutia tied to his occupation, and therefore, in perpetuating bondage to them.

The Forest and "Podu" cultivation—The area is well-forested, but these forests are constantly ravaged by Podu, resulting in rapid soil erosion, degradation of the soil and loss of valuable top soil, particularly on the hill-slopes and general deterioration of the environment. The catchment area of major rivers, Mahanadi and Bansadhara being, thus, denuded, creates havoc of flood and erosion down the villages. According to information furnished by the Forest Department about 17 per cent of the total forest area of 23,628 hectares is badly affected by Podu, the break up being as under:—

(*i*)	Reserve Forest—1,200 hectares out of total of 10,648 hectares	(11%)
(*ii*)	Proposed Reserves—2,300 hectares out of 4,949 hectares	(46%)
(*iii*)	Other forested land—500 Ha. out of 8,031 hectares (Revenue land)	(6%)
	Total 4,000 Ha. out of 23,628 hectares or	17%

Extent of Podu—According to figures furnished by the K. K. D. A. the total estimated area affected by Podu cultivation is about 1,600 hectares. Apparently, this indicates the area directly under 'Podu' at present, and does not include the area affected by Podu in the previous cycles (Podu is practised on a 3 to 6 years cycle, depending on the condition of the soil after repeated cycles) and that already rendered barren due to repeated Podu over the ages. Although the K. K. D. A. authorities feel that there has been some reduction in the extent of area under podu because of the impact of various schemes under operation since 1978, the ground realities do not justify this optimistic asssumption. No dependable estimate of the actual area under Podu has been made on the ground by the K. K. D. A. authorities. Hence, it is difficult to dispute the figures of area under podu as given by the Forest Department. In any case, the impact of these schemes can at best be termed as only marginal.

Proposed Reserve Forests—It is evident that 'Podu' is rampant in areas termed, as "Proposed Reserve Forest" by the Forest Department. These are forested areas proposed for being constituted as "Reserve Forests" under the provisions of Chapter II of the Orissa Forest Act, 1972. After demarcation of the area, the Forest Department has sent draft Notification under section 4 of the Act, to the Collector, Phulbani, for eventual transmission to the State Government. It appears these draft Notifications are now pending at the Collector's level and there is serious objection from the Project Authorities to get these areas declared as R. F., as that will severely limit the scope of getting suitable land for the proper rehabilitation of the Kutia Kandhas. These differences and controversy need to be resolved as early as possible, in the interest of all concerned, particularly because even without being constituted as Reserve Forests, these areas attract the provisions of the Forest (Conservation) Act, 1980, thereby making it obligatory for the State Government to obtain prior approval of the Central Government before putting the land to any non-forestry use. Any inter-departmental controversy in the matter will, therefore, be against the larger interest of the tribal people and hence of the State itself. It is, therefore, highly desirable that this centroversy is sorted out as early as possible, making enough suitable land available for development schemes and declaring the remaining area, particularly hilly land and steep slopes as Reserved Forests. The Collector, Phulbani is the best authority to attend to this and bring about a satisfactory solution to the vexed problem, in consultation with appropriate authorities of the Forest and other concerned Departments of Government.

Kutias and the Environment—It is needless to stress that the environment and the tribal people are closely inter-linked and constitute the two sides of the same coin. In fact, the tribal and the forest have a symbiotic relationship for ages. It is,

therefore, evident that no approach which caters to the development of one (environment) to the exclusion of the other (tribals) or *vice versa*, will ever succeed. This has been proved again and again by the experience gained elsewhere by the Forest Department and other concerned Departments/Agencies. Therefore, concern for the tribal people must be as high as that for the environment, if at all success of any scheme is desired. Unfortunately, most of the schemes under implementation in the project area today lack such concern for both tribes and the environment. In this context, it is worthwhile to take note of the following important points which have a direct bearing on any proposal for tribal development.

Constraints met with—In addition to object poverty, his near-total illiteracy even today is a great hinderance for making the Kutia aware of his rights and obligation.

It is not the Kutia alone who takes to shifting cultivation (though he takes all the blame for it), but almost all the non-tribal residents in the area also resort to this practice.

The tribal people for whom various development projects are being implemented have no say nor participation in the process of planning, formulation of schemes, or decision-making. The on-going schemes hardly take any note of their social system or collective aspirations.

The tribal people take to shifting cultivation out of sheer compulsion, because they have nothing else to fall back upon. They also suffer from a sense of guilt and inferiority which has been imposed upon them from outside, over the ages, branding them as the destroyer of the environment and hence anti-national in practice. No wonder, they mistrust all outsiders, and try to keep away from them. The exploiting middlemen and traders take full advantage of this sad situation.

Hardly 15 per cent of all crops raised by him yield any positive return to the shifting cultivator and in most cases, the worth of the crop yield is less than 25 per cent of the labour and inputs involved, in producing the crop.

The shifting cultivator would definitely earn much more, if he is provided daily labour on approved minimum wages for any work in which he can be employed.

In case of the Kutias, the trader-exploiter has a clear vested interest in this (Kutia's) ego (Raja) so as to prevent him from taking up any labour intensive work. It, therefore, becomes necessary at times to induct labour from outside for doing work which the Kutia could be persuaded to do, thereby giving him fruitful employment.

Given proper assistance and encouragement, a tribal can be persuaded to give up shifting cultivation, over a period of 5 to 10 years provided gainful employment is assured to him. His preference, of course, would be for adequate return from land.

It is the middleman trader/money-lender who derives maximum profit out of the Kutia's utmost dependance on shifting cultivation. Unless effective steps are taken to break this unholy nexus and free the Kutia from this bondage, no scheme for his uplift will succeed.

It has been established through studies taken up by NISWAS, that level land at the foot hills given earlier to the Kutias as part of the efforts to rehabilitate them, has since passed on to the hands of the traders/money-lenders. Effective legal provision is required to prevent recurrence of such undesirable transfers, and to curb the overt and covert exploitation of the Kutia at the hands of these exploiters.

In their eagerness to expedite progress of development schemes, the concerned authorities often resort to inducting large-scale labour from outside, which precludes the scope for employment of the Kutia Kondhs. The emphasis should be on providing maximum employment opportunity to the local tribal people and induction of outside labour should be limited to the minimum and resorted to only when necessary.

Whatever scheme is to be implemented, emphasis should be on simple low cost technology which can be adopted by the Kutia without much difficulty on special training. Emphasis should be given on the Kutia beneficiaries and their own involvement.

Schemes under execution in the area—The K. K. D. A. started functioning in 1978-79 and has been in operations for nearly 12 years. The scheme for Podu Prevention has been launched since 1989. Though the progress of these schemes has been generally good, as stated earlier, their impact on "shifting cultivation" or on the economic uplift of the Kutias has not been impressive, because of the constraints mentioned earlier. The objective of this report is to outline the specific Agro-Forestry Schemes (S.A.L.T.) for implementation in the project area on experiment basis, so as to supplement the efforts of other Departments in ensuring speedy rehabilitation of the Kutia.

PART II

RECOMMENDATIONS

Introducing Salt Technology—Keeping in view the overall picture as depicted in Part I of this report, it is recommended that Agro-forestry practices, commonly known as SALT (SLOPING AGRICULTURAL LAND TECHNOLOGY) which have been tested and developed for almost identical situations in the Phillipines and approved and documented by the I. C. A. R., New Delhi should be introduced in the tribal areas of Orissa where large scale Podu cultivation is still in vogue, with a view to providing the tribal people with a simple low-cost and dependable alternative to Podu cultivation, at the same time ensuring restoration of the damage to the environment as quickly as possible. To begin with, this technology should be introduced on selected areas as Demonstration Plots on experimental basis without affecting any of the on-going schemes. In fact SALT may be treated as a supplement now, and extended further to cover the entire area only after the tribal people are convinced of its success, say after about 3 years from now.

What is SALT—SALT is a simple, applicable, low cost and timely method of farming the uplands. This technology was developed for farmers with few tools, small capital and little learning in agriculture. A farmer can easily integrate his traditional farming practices in the SALT system, without sacrificing his basic beliefs and ego.

If farmers leave the SALT farm, as some tribal groups do in case of shifting cultivation the Nitrogen Fixing Trees (NFT) already put in the area will continue to grow and over-shadow the crop area. By the time the land is reverted to shifting cultivation, the soil would have already been enriched by the large quantity of leaves from the Nitrogen Fixing Trees (NFT) and there would be no erosion to contend with because of the contour-bunding already done. In addition, the trees may be harvested for firewood or charcoal as additional source of income. In the Phillipines, it has been established that the crop yield in such land is at least 50 per cent higher than in traditional farming of the shifting cultivator.

Different Stages or Categories of SALT

(i) *SALT-I* or *Sloping Agricultural Land Technology* is an agro-forestry technology with agricultural and forestry crops at a percentage ratio of 75:25. The experience in the Phillipines shows that this technology can help reduce soil erosion by four times, increase crop yield by five times, and income by six times. Obviously, this is applicable to land with gentle slopes, where agriculture can be practised with minimal anti-erosion methods, in conjuction with Nitrogen Fixing Tree species.

(ii) SALT-2 or *Simple Agro Livestock Technology* is goat-based agro-forestry with land use up to 40 per cent for agriculture, 20 per cent for forestry and 40 per cent for livestock. This technology minimises erosion, improves soil fertility and provides a regular decent income to the family. This takes care of uplands and hill-slopes. The upländer badly needs food, wood and animal products, like meat and milk (not yet for the Kutia who is to be taught the use of milk through suitable awareness programmes), which can supplement the family income.

(iii) SALT-3 or *Sustainable Agro-forest Land Technology* is a small-scale reforestation integrated with food production. The farm is devoted to about 40 per cent agriculture and 60 per cent forestry. This "food-wood" intercropping as designed in the Phillipines shows that it can effectively conserve the soil, thereby providing abundant food, wood and income to the hilly-land farmer. Deforestation, soil erosion and inappropriate farming technologies are the three major causes of low farm productivity, resulting in the manifold poverty in the uplands. Agro-forestry is, therefore, becoming one of the sustainable alternatives for sufficient food production and income generation for the hill areas. SALT-3 is the answer to the problem in steep slopes where he tribals practise podu, in the absence of any other alternative.

Scope and Objectives of the Scheme—The important objetive of the scheme are :

(a) Implementation of suitable SALT technology (SALT 1, 2 or 3) in the hilly land which has been depleted of the vegetation, and is now susceptible to severe erosion in the process of shifting cultivation.

(b) Demonstration of suitable SALT technique in different localities on farmer's land and also on Government land, where farmer's land is not readily available.

(c) Employment of the villager (and no outsider) on his own land or on neighbouring Government land in order to ensure that he gets a decent wage while learning the techniques, and also gets the fruit of labour after successful implementation. In no case, induction of outside labour should be permitted.

(d) Each demonstration plot should be in charge of one person/family so that involvement is total; manpower requirement and financial involvement can be assessed correctly.

(e) Demonstration plots will be converted into production units of the village after two years, when each plot is expected to provide sufficient income for an average family.

(f) Extension and awareness education shall be provided side by side so as to ensure that the tribal people are able to derive maximum benefit which induce them to adopt the technique.

(g) Collaboration with the Social Forestry Directorate and O.U.A.T. for providing guidance including lending of extension staff (Forestry Extension Officers), simple tools, seeds and other inputs required for the demonstration plots.

Plan of Implementation :

Selection of sites for demonstration plots according to information collected by the T.H.R.T.I. and K.K.D.A. the project area comprises 61 villages (in 2 Gram Panchayats of Belghar and Gumma) with distribution of households as under :—

Category I	Villages with 25 or more households	... 8
Category II	Villages with 15—24 households	.. 25
Category III	Villages with 5—14 households	.. 28
	Total	... 61

It is proposed to set up SALT Demonstration plots in all the villages in course of the next five years (1992-93 to 1996-97) so as to ensure coverage of the entire project area in the coming five years. The current year will be devoted to (*a*) scrutiny and approval of the scheme, (*b*) provision of funds, (*c*) selection and deployment of Extension Officers, (*d*) Preliminary works, like survey and selection of sites, selection of beneficiaries etc. so as to ensure that adequate number of demonstration plots are set up without fail before the rainy season in 1992, as per this scheme.

The funding of the scheme and control of the staff should be directly under the Special Officer, K. K. D. A. in order to ensure that there is proper co-ordination and adequate supervision.

The demonstration plots will be of uniform size of 25 metres × 60 metres (1,500 sq. metres or 0·15 hectare or 0·375 acre) each which is considered to be handled easily and effectively by a single farmer, and to provide enough resources for an average family, when fully developed. It is proposed to set up such demonstration for different categories of villages as under:—

(*a*) For category I villages. (with 25 or more households each total 8 villages).	3 Demonstration plots for each village, preferably one from each category of SALT 1, 2 & 3 if possible. Total 24 Demonstration plots
(*b*) For 25 villages of category II with 15—25 households per village.	One Demonstration plot for each village, the SALT category depending on the local conditions. Total 25 Demonstration plots
(*c*) For 28 villages of category III with 5—14 households per village.	One Demonstration plot for even two contiguous villages, of the category found most suitable for the area. Total 14 Demonstration plots

Grand Total—63 SALT DEMONSTRATION PLOTS

This will mean at least one Demonstration plot per village for the project area.

Estimates of Expenditure—As already stated, the work will be labour intensive, emphasis being laid on engagement of the Kutia on daily wages basis either on his own land or on Government land for setting up a SALT demonstration plot. One person will be required to set up a standard size Demonstration plot (25 metres × 60 metres) which will sustain him round the year. The plot is expected to be self-sustaining in the 4th year, thereby eliminating payment of daily wages. In very exceptional cases, payment of wages (for much reduced number of days) may have to be made in the 4th and 5th year. This need not however be taken into consideration at this stage. Therefore wages paid to the Kutia for setting up a standard-sized Demonstration plot are calculated as under:—

	Rs.
1st year 300 mandays @ Rs. 25	.. 7,500·00
2nd year 250 mandays @ Rs. 25	.. 6,250·00
3rd year 150 mandays @ Rs. 25	... 3,750·00
Total	... 1,7500·00

The cost of staff (one Forestry Extension Officer for the project area and two Village Forest Workers (VFW) one for each of the two Gram Panchayats), seeds and other inputs, simple tools for survey and contouring (A frame) etc. have been taken at lump sum basis @ Rs. 50,000 per annum.

The total number of SALT Demonstration plots of different categories (SALT 1, 2 & 3) to be laid out as indicated is 63. Thus, the total estimated expenditure on labour will be 17,500 × 63 = Rs. 11·03 lakhs. Overhead expenditure on staff, supervision, seeds and other inputs tools, etc., for 8 years (one year prior to launching of the project, and 2 years after the last batch of Demonstration plots are laid) @ Rs. 50,000 per annum as stated above come to Rs. 4·00 lakhs. Thus, the total expenditure of Rs. 15·03 lakhs will be phased out as in the following schedule (15·07 lakhs as shown in the schedule because of rounding off).

TABLE 4·1·1

Yearwise phasing of work and expenditure

Financial year	Number of Demonsrtation plots to be set up				Preliminary Exp. staff, tolos & inputs	Estimates of exependiture (in lakhs rupees)				Remakrs
	CAT. I villages	CAT. II villages	CAT. III vilages	Total No. of D. Plots		1st year Exp.	2nd year Exp.	3rd year Exp.	Total	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1992-93 ..	...	..	..	..	0·50	..	..	..	0·50	
1993-94 ..	5	5	3	13	0·50	0·98	.	..	1·48	
1994-95 ..	5	5	3	13	0·50	0·98	0·81	..	2·29	
1995-96 ..	5	5	3	13	0·50	0·98	0·81	0·49	2·78	
1996-97 ..	5	5	3	13	0·50	0·98	0·81	0·49	2·78	
1997-98 ..	4	5	2	11	0·50	0·83	0·81	0·49	2·63	
1998-99 ..	..	..	..	..	0·50	..	0·70	0·49	1·69	2nd & 3rd year operation only.
1999-00 ..	..	..	..	..	0·50	..	..	0·42	0·92	
Total ..	24	25	14	63	4·00	4·75	3·94	2·38	15·07	

Note —(*i*) The total expenditure up to end of 1995-96 will be Rs. 7·05 lakhs

(*ii*) Subject to availability of funds, the total number of SALT Demonstration plots and the number to be set up annually can be increased proportionately to expedite completion of the project. In fact, a review should be made at the end of the third year to assess the results and to intensify the scheme in case of good responses.

Requirement of Staff—One Forestry Extension Officer for the project area and two VFW (Village Forest Workers), one for each G.P. in the project in SALT TECHNOLOGY will be required to begin with. These Extension staff may be brought on deputation from tha Directorate of Social Forestry under normal terms and conditions approved by the State Government. They should work under the direct control and supervision of the P oject Leader, K.K D.A. The estimates of annual expenditure as shown above are inclusive of the salary component of this staff. All the field work will be labour-oriented and executed exclusively by the K.K.D.A. (either on beneficiaries own land or on Government land on payment of regular daily wages in either case). Requirement of additional field staff, i.e., VFW may be reviewed in 1995-96 when the number of Demonstration plots exceeds 30, and/or if it is decided to intensify this project depending on response of the tribals.

Tools and equipment and other inputs—Simple tools and equipment required for field contouring (A frame) and survey etc. can be purchased out of the funds provided under the scheme. Input such as seeds of fast growing Nitrogen-fixing trees species, improved varieties of agricultural crops, etc., can be purchased out of the funds provided in the estimates.

Technical Collaboration and Supervision—Since this technology (though very simple and inexpensive by itself) is being introduced for the first time, it is absolutely necessary that close collaboration and liaison is maintained with the concerned authorities of the Directotate of Social Forestry (Deputy Director, Social Forestry, Phulbani in particular) and of the O.U.A.T.

HOW TO TURN YOUR HILLY LAND WITHOUT LOSING YOUR SOIL

Introduction

About 70 years ago Phillipines was almost totally covered with forest resources distributed throughout the archipelaga. These resources provided income, employment, food, medicine, building materials, and water as well as a healthy environment. Today, of the 30 million hectares consriruting the Phillipines, only 16·7 million hectares (or 56%) is classified as forest. This consists of about 5·6 million hectares of unclassified land and 11·1 million hectares of forest land.

Soil erosion great problem

2. One of the greatest problem that a man will encounter when forest trees are cut extensively without replanting is soil erosion. The erosion of the to soil that thin upper crust on the earth's surface on which man plants his food crops is an extremely serious problem in the Phillipines.

Importance of Topsoil

3. Soil is the result of the gradual weathering of rocks and minerals. Soil formation is a very slow process that takes place at the rate of 2·5 centimeters per century. Topsoil is rich and fertile because of its organic matter content. Plants and animals die, decay, disintegrate and are incorporated in the soil, making the soil fertile and capable of supporting the growth of food crops.

Function of topsoil in Agriculture

4. Topsoil stores plant nutrients air, and moisture. It is a virtual factory of intense biological activity, innumerable furgi and bacteria in topsoil break down organic matter and make the soil richer. Topsoil, therefore, is essential to productive agriculture.

The nutrients in topsoil are crucial to crop production. They are the food of plants. So, if the topsoil is lost, you cannot get a good harvest from your land unless you use expensive commercial fertilizer. The best thing you can do, therefore, is to protect your hilly land from soil erosion. Bear in mind that poor soil makes a farmer poor.

Apply "SALT" in your hilly land

5. There are several traditional ways of controlling soil erosion, such as reforestation, terracing, multiple cropping, contouring and cover cropping. The Mindenao Rural Life Centre in Kinuskusan, Bansalan, Davao del Sur, Phillipinps, has developed an erosion control technique that is both easier and less expensive to implement than the traditional methods. This technology is known as SALT or Sloping Agricultural Land Technology.

What is "SALT" ?

6. SALT is a package technology on soil conservation and food production, integrating different soil conservation measures in just one setting. Basically, SALT is a method of growing field and permanent crops in 3 metre to 5 meterwide bands between contoured rows of nitrogen fixing trees. The nitrogen fixing trees are thickly planted in double rows to make hedgerows. When a hedge is 1·5 to 2 meters tall, it is cut down to about 40 centimeters and the cuttings (tops) are placed in valleyways to serve as organic fertilizers.

SALT an Agro-Forestry Scheme

7. SALT is a diversfied farming system which can be considered agro-forestry since rows of permanent hrubs like coffee, cashew, citrus and other fruit trees are dispersed throughout the farm plot. The strips not occupied by permanent crops, however, are planted alternately to cereals (corn. upland rice, sorghum, etc.) or other crops (sweet potato, melon, pineapple, castor, bean. etc.,) and legumes (soybean, mung bean. peanut, etc.,) This cyclical cropping provides the farmer some harvest throughout the year. SALT also includes planting of trees for timber and forewood on surrounding boundaries. Examples of treespecies for "boundary forestry" in SALT are mahoganics, casuarinas, sesbanias, cashewnuts, pili nuts, etc.

History of SALT

8. SALT was developed on a marginal site in Kinuskusan, Bansalan, Davao del Sur. In 1971 the Mindano Rural Life Centre started to employ contour terraces in our sloping areas. Dialogues with local upland farmers acquainted the Centre with farm problems and needs which gave us the impetus to work out a relevant and appropriate upland farming system.

From testing different inter-cropping schemes and observing ipil-ipil-based farming systems in hawali and at the Centre, the SALT was finally verified and completed in 1978. While it was still in the developing stage, the following quidelines were considered essential. The system must adequately control soil erosion, help restore soil structure and fertility, be efficient in food crop production, be applicable to at least 50 per cent of hillside farms, be easily duplicated by upland farmers with the use of local resources and preferably without making loans, be culturally acceptable, have the small farmer as the focus and food production as the top priority, be workable in a relatively short time, require minimal labour and be economically feasible.

In 1978 a hectare of land was selected as a test site at the Mindanao Rural Life Centre. It was typical of the surrounding farms; slope steeper than 15 degrees, had been farmed for five years or more, and had soils similar to those of most farms in the area. Contour lines were established carefully with the aid of an A-frame and planting of hedgerows and permanent crops was begun.

Advantages of SALT

9. The advantages of SALT are that it is a *simple, applicable, low-cost* and *timely* method of farming uplands. It is a technology developed for farmers with few tools, little capital, and little learning in agriculture. Contour lines are run by using an A-frame transit that any farmer can learn to make and use. A farmer can grow varieties of crops he is familiar with and old farming patterns can be utilised in the SALT system.

If farmers leave the SALT farm, like some tribal groups do, the nitrogen fixing trees will continue to grow and overshadow the crop area. By the time the land is reverted to cultivation, the soil has been enriched already by the large amount of nitrogen fixing leaves and there is no erosion to contend with. In addition, the trees may be harvested rof firewood or charcoal.

Various Forms of SALT

10. There are several forms of SALT and a farmer may wish to use the SALT system in several variations. Small Agro-Livestock Land Technology (SALT-2) and sustainable Agro-forest Land Technology (SALT-3) are two variations of SALT that are being tested at the Mindanao Baptist Rural Life Centre. Other variations could be developed.

SALT-2 (Small Agro-livestock Land Technology) is a system in which animal production is integrated into a conventional SALT type project. One example may be one-fourth hectare producing forage and food for animals (such as dairy goats or meat goats) with the manure from the animals being used to grow corn in another one-fourth hectare that the farmer has contoured, the corn being grown in the alley was between the hedge rows. In one test here at the MBRC, yield was four tonnes of shelled corn per hectare per crop using goat manure as the source of fertiliser. Other combinations of animals and crops could be used. SALT-3 (Sustainable Agro-forest Land Technology) is a croping system to which a farmer can incorporate food production, fruit production, and forest trees that can be marketed, The farmer first develop a conventional SALT project to produce food for his family and possible food for livestock. On another area of land he can plant forest fruits, such as, ambuton, durian, and lonzones between

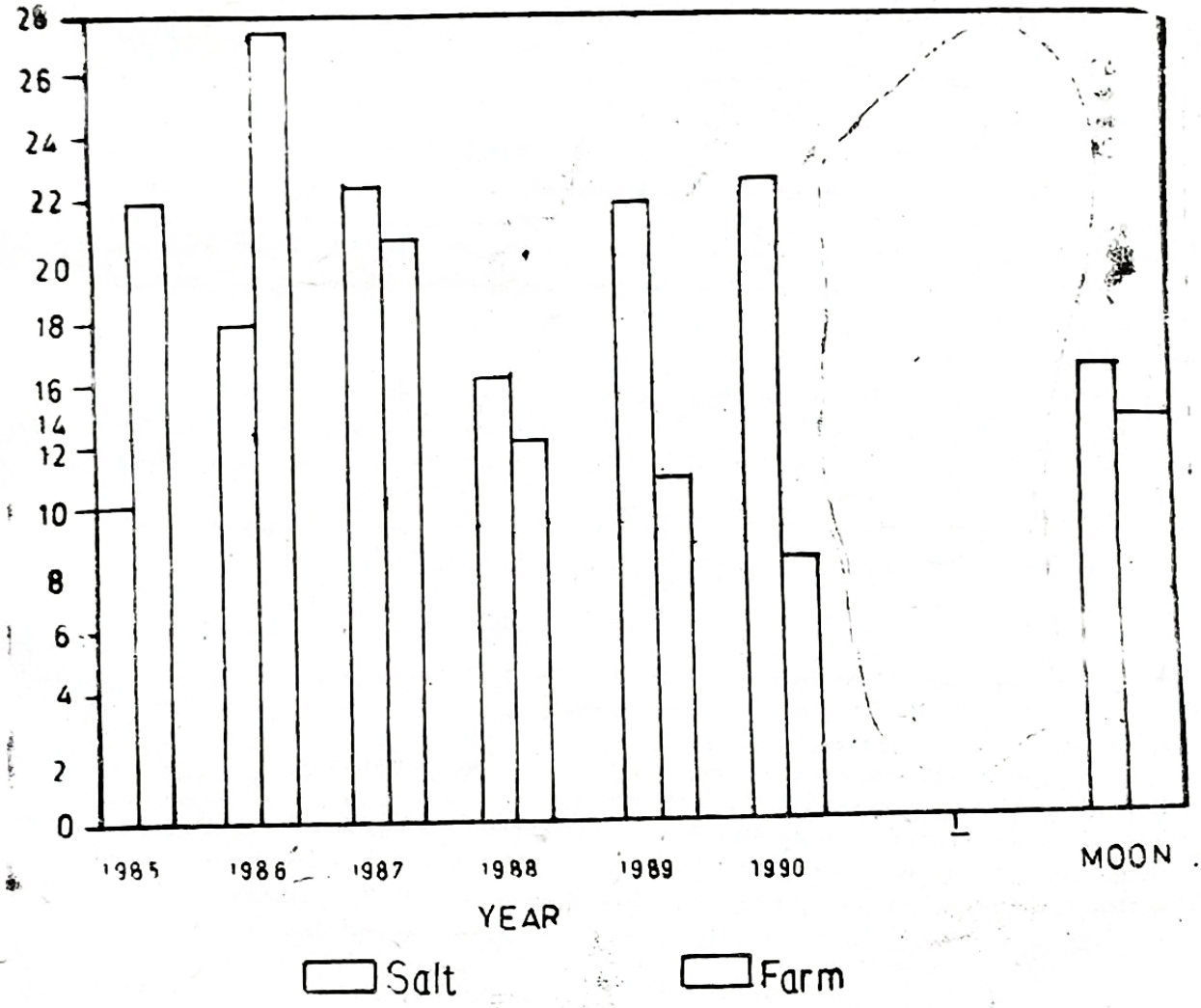
the contour lines. The plants in heagerows will be cut and piled around the fruit trees for fertiliser and soil conservation purposes. A small forest about one hectare will be developed in which trees of different species may be grown for firewood and charcoal for short-range production. Other species that would produce wood and building materials may be grown for medium and long-range production.

In some areas where the soil is too steep for row crops, contour lands may be established two or three metres apart and planted with flemlaria or some other hedgerow species, and in between the hedgerows coffee, cacao, calamansi or other permanent crops could be planted.

Income

Annual net income from the SALT treatment was less than net income from the farmer treatment for the first two years of the test (figure 1). However, the overall trend (1985—1990) of the net income of the farmer treatment decreased while net income of SALT increased or remained relatively constant. As a result, the ratio of net income of the SALT treatment versus the Farmer treatment increased each year so that in 1990, the net income from SALT was more than double that of the farmer treatment. The contribution from perennial crops to SALT income increased every year until in 1989, perennial crops contributed the major portion of income to the SALT treatment.

Fig.1-Comparison of Net Income.
Salt vs. Farmer's system



Soil Physical and Chemical Properties

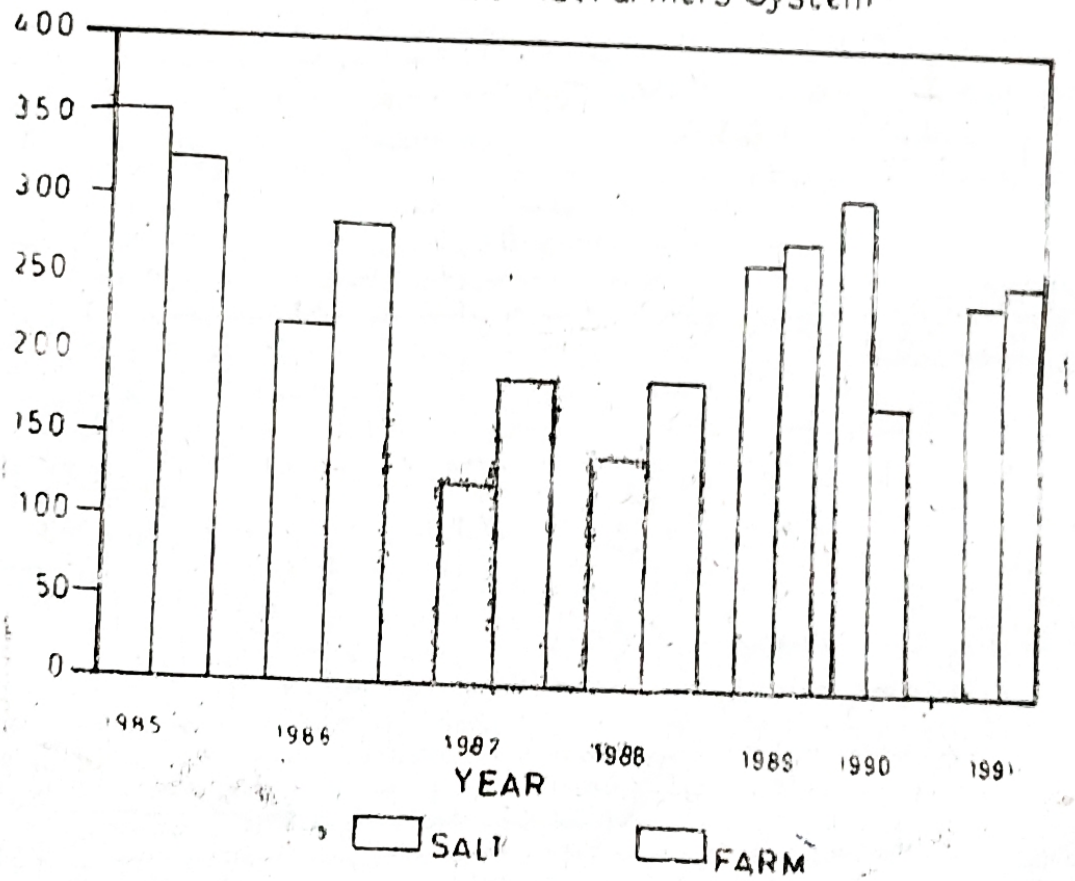
There is little to report in way of the changes in soil physical and chemical properties between the two systems. Data is still being gathered but it seems that it takes more than five to six years to change physical and chemical properties of the soil. However, there is evidence of trend towards increased organic matter, infiltration rate, and nutrient uptake efficiency in the SALT treatment. These conclusions are based on visual observation of surface organic residue build-up, increased earthworm activity and a more "crumb-like" structure of the soil in the SALT treatment as opposed to the farmer's treatment. Also, the good corn production (2-3 m. t./ha/crop) even during dry season suggests more favourable soil properties in SALT.

Labour

One of the surprising results of the Test SALT study was in the area of labour. It had previously been thought that SALT farming would be more laborious due to the establising and maintenance of contour hedgerows. However, from figure 2, it can be seen that although there is more labour in the first year of the project due to hedgerows establishment and planting of permanent crops, there seems to be less labour involved in the succeeding four years. The relatively low labour requirements of SALT from 1986 to 1989 can be explained by the smallest area under annual crops and the low intensities of labour use in land under perennial crops/hedgerows relative to land under annual crops.

Fig.2-Comparison of Labour Inputs

Salt vs. Farmer's System



evidence of a trend towards increased organic matter, infiltration rates, and nutrient uptake efficiency in the Salt treatment. There was four tons of shelled corn per hectare per crop using goat manure as the source of fertilzer. Other combinations of animals and crops could be used.

SALT 3 (Sustainable Agroferest Land Technology) is a cropping system in which a farmer can incorporate food production, fruit production, and forest trees that can be marketed. The farmer first develops a conventional SALT project to produce food for his family and possibly food for livestock. On another area of land he can plant forest fruits such as rambution, durian and lanzones between the contour lines. The plants in the hedgerows will be cut and piled around the fruit trees for fertilizer and soil conservation purposes. A small forest of about one hectare will be developed in which trees of different species may be grown for firewood and charcoal for short-range production. Other species that would produce wood and building materials may be grown for medium and long-range production.

In some areas where the soil is too steep for row crops, contour lines may be established two or three meters apart and planted with flemlagia or some other hedgerow species and in between the hedgerows coffee, cacoon, calamansi or other permanent crops could be planted.

However, in 1990, the labour in SALT becomes higher than in the farmer's treatment due to the high production of permanent crops (primarily citrus). Thus labour in SALT tends to increase with time untill the permanent crops incorporate into the system attain maturity and reach maximum production. It should be noted that this extra labour is "harvest" labour which is readily accepted by the farmers.

Conclusions

The first definition of sustainability from "The American Heritage Dictionary" (Houghton Mifflin Company, 1978) is "to keep in existence, to maintain, or to prolong". In this respect, in regard to the above data and discussions, SALT can lay claim to being a "sustainable" upland farming system.

Anthony Young ("10 Hypotheses for Soil—Agroforestry Research") (7) defines sustainability as "Production+Conservation". In long form, he defines sustainable land use as"....that which maintains an acceptable level of production and at the same time conserves the basic resources on which production depends, so enabling production to be maintained".

SALT maintains production at an acceptable level to the upland farmer. It helps him to sustain his production of his basic staple corn, at levels equal to or greater than national averages. It does this through protecting the soil against acusive erosion and ameliorating it at the same time by the additions of high amounts of leguminous biomass from the contour hedgerows.

Moreover, it conserves the basic resources on which his production depends, namely, the topsoil. This conservation of the topoil enables production to be maintained over a long period of time. How long a period of time? That question cannot be answered at the present. However, it should be noted that the rebuilding of destroyed topsoils and ecosystems due to man's wasteful and/or uniformed usage takes much longer than it took to destrory it. No farming system can "miraculously" restore unproductive soils overnight.

The topsoil has been described as the fine line which separates civilisations from extinction, when it is gone, so will be the people that depends upon it for survival. SALT is no "miracle" system but it is one sustainable farming system for the uplands that can help the upland farmer put back into production his unproductive farm and, at the same time, maintain his topsoil resource base.

4·2. SOIL CONSERVATION

Land

(*i*) *Relief features*—The track of land which is inhabited by the Kutia Kandhas are part of the Eastern Ghat. The floor of the high plateaus varies around 2,000 ft. The Kutia area is marked by hillocks intercepted by narrow and small streams and narrow strips of valley bottom lands. The general altitude is of the order of 2,500' (769m). Physiographically the terrain is undulating with anticline folds and synclinal valley intersected by narrow drainage channels. The rocks are all of igneous and metamorphic type. The dominant rock occurring in the area is garnet and silimanite. T. L. Walker (1902) wrote "instead of the awkward descriptive name garnet-sillimanite-graphite-schist, I propose to call these rocks Khondalite in honour of the fine hillman Khond in whose mountain jungles, khondalite is better developed than in any other region".

According to the topography, physical condition, present land-use, the whole area can be subdivided into different physiographic units as per the details given below:—

TABLE 4·2·1

Physiographic units of K. K. D. A.

Physiographic Unit (1)	Physiognomic Unit (2)	Land type (3)	Subland type (4)	Present land use (5)
Hill ...	...	..	..	(a) Without vegetation shifting cultivation area. (b) With thin vegetation
Hill slope ..	...	..	..	(a) With thin forest (b) Barren
Pediment ..	...	Upland	Unbunded	(a) With shrub forest (b) Under shifting cultivation
			Bunded	(c) Under cultivation
Valley ...	Velley top	Medium land. Low land dry. Low land wet.	Bunded	(a) Under cultivation

The average slope of the area varies from 3·25%

(*ii*) *Drainage*—The drainage pattern of the area is dendritic. The surface drainage in hills is very rapid in hill slopes, moderately rapid in the pediments whereas in medium dry-low land the drainage is moderate. In the low wet-land waterlogging condition exist. The runoff from the area are drained to river Mahanadi in the north and north-east and to river Vensadhara in the south and south-west. There are many perennial streams.

(iii) Climate—The climate of the area is warm humid sub-tropical. The average rainfall of the area is 1,360 mm. Distribution is erratic. The south-west monsoon brings about 80 per cent of the total rainfall between June to September after which the rain tails off and comes to a stop. The winter rains are uncertain and scanty. These help the Rabi crops and helps to set the wild mango blossoms in order to produce fruit kernels for supplementary food (during April to August).

There are extremes between winter and summer temperature as well as minimum and mean maximum temperature. In winter the mean minimum temperature is 6·3°C. The mean maximum temperature is 30·1°C. Humidity percentage is 44·5 in April and 85·5 in August. Since meteorological station is not located in the project area, data of Phulbani/Tumudibandh have been used.

The number of rainy days are 90. On the basis of rainfall and temperature the year may be divided into four seasons. The hot season is March to mid-June. The monsoon season is from mid-June to September. Tne post-monsoon season starts from October to November (not separately felt). The cool season is from December to February.

4·2·2. *Soil*—A detailed soil survey was undertaken in the mini-watershed by the Directorate of Soil Conservation, Orissa. Five different soil series were met across. The description of each series is given below :—

(i) Susabata series—The Susabata series is a member of the "Lithic ustorthents" This soil has very dark greyish brown to dark brown colour, slightly acidic to acidic loam (gravel-20 per cent). A-horizon and yellowish red acidic, gravelly sandy loam C-horizon. The soil has developed in most of the hill slopes varying from 10·33 per cent in an elevation of about 200′ to 2250′ from mean sea-level. The soil is very shallow, moderately well drained with very low ground water table. These soils are highly erroded in steep hill slopes. The area under this soil is either barren or under bushy forest growth.

(ii) Deogarh series—The Deogarh series is a member of "Udio Rhodustalfs'" The Soil has dark yellowish brown, mildly acidic A-horizon. Yellowish red to dark red acidic to mildly acidic B-horizon and dark red acidic C-horizon. The soils have developed on hill pediment having topography of 3 to 5 per cent slope group in the unbunded up lands of the project. The soils occurs at an elevation of about 2500′ above the M. S. L. The soils are clay loam to clay and are well drained with moderately high permeability.

(iii) Belghar series—The Belghar series is a member "Udic-Haplustalfs". The soils under this series have brown acidic loam A-horizon, brown to red mildly acidic clay loam B-horizon and dark reddish brown mildly acidic clay loam C-horizon. They have developed in hill pediment having topography of 2 to 3 per cent slope group in unbunded uplands to the project. The soils occur in an elevation of about 2500′ above the M. S. L. The texture of the soils is clay loam and are well drained with moderately high permeability.

(iv) Guma 1 series—The Guma 1 series is a member of "Udic haplustalfs". The soils of this series have dark greyish, brown mildly natural to slightly acidic, sandy loam A-horizon, dark yellowish brown to dark redish brown acidic to slightly acidic salty clay loam B- horizon and dark reddish brown, acidic clay loam C-horizon. They have developed in the bunded uplands at an elevation of about 2500′ above the M.S.L. The soils are moderately well drained with moderate permeability. These soils are extensively cultivated with paddy.

(v) Guma 2 series—The Guma 2 series is a member of "Typichaplaquepts". The soils of this series have light yellowish brown, slightly acidic loam A-horizon, dark greyish brown to very dark grey, slightly acidic to mildly alkalirclay B-horizon and very dark grey acidic clay C-horizon. Those soils have been developed in the moist valley, low-lying lands or near the Nalla or river banks on a nearly level terracess of the project area at an elevation of about 2230' above the M.S.L. The soils are somewhat imperfectly drained with moderately low permeability. It requires drainage facility.

(vi) Land capability classification—The capability classification is a grouping that shows in a general way, how suitable the soils are for most kind of farming. Classification of soil into capability grouping enables one to know (1) the hazards of soil to various factors which cause soil damages and lowering in fertility and (2) its potentiality for crop production. Altogether there are six capability classes of land in this watersheds, i. e., from Class II to Class IV and Class VI to Class VIII land out of which first three classes of land, i.e., from Class II land are suitable for agriculture purpose and the last three classes land i. e. from Class VI to Class VIII are not suitable for the agricultural/horticultural purposes, but suitable for plantations, pasture, wild life protection and plantation, etc.

Class II land

Land of this class is good, but it has some limitation of winter soil, topography or drainage that reduces the choice of crops which requires moderate congervation measures. The use of land in Class II may be limited by one or more factors such as (1) gentle slope, (2) moderate erosion hazard, (3) inadequate soil depth, (4) slight to moderate alkalinity or salinity condition, (5) less than ideals soil structure and workability, (6) somewhat restricted drainage, it is to be cultivated safely.

Class III land

These lands are moderately good and can be used for cultivating crops regularly in good rotation under better management system. Land of this class has severe limitations that reduces the choice of the crop or requires special conservation measures or both. Limitation the use of land in Class III results from factors such as (1) moderately steep slope. (2) high erosion hazard, (3) very low permeability, (4) shallow depth and restricted root zone, (5) low water holding capacity, (6) low fertility, (7) unstable soil structure, Class III land often requires special conservation measures.

Class VI land

Land of this class has very severe limitations that restricts if use largely to pasture or range or wood land or wild life. It needs protective measures usually because of slope, or shallow soil. The limitations are same as those of Class IV land but erosion is more severe.

Class VII land

The land has very severe limitations that restricts if use in grazing, wood land or wild life. The limitations are same as Class VI except they are so severe that pasture development is impracticable. It needs extreme care to overcome or cope with its major limitations which usually have steep slope, very shallow soil.

Class VIII land:

The land of this class has very severe limitations slope and erosion and unsuitable for pasture development also. This class of land is suitable for watershed protection and wild life recreation, etc.

Class IX land

This class is fairly good, but its safe cropping use is limited by natural features such as slope, erosion, adverse soil characteristics, or adverse climate. These land have very severe limitations on the choice of crop and require very careful management. This category of land has one or more of the following limiting factors, such as (1) steep slope, (2) severe erosion susceptibilities, (3) severe past erosion, (4) shallow depth, (5) alkalinity or salinity. It is marginal land best suited for pasture, etc.

WATER

Water resource and water budget for the project area.

1. The average annual rainfall of the project area is 1360 mm. (average of rainfall from 1980 to 1990 (eleven years). No definite data are available for the project area to find out how much of this seeps into the soil, how much is lost as evapotranspiration and how much is available as surface run-off. However, the Ministry of Agriculture has indicated the amount of run-off that is available for 22 stations in India. It has been indicated that for Cuttack the average rainfall is 1529 mm. and average run-off is 648 mm., i. e., 42·3 ·/. of precipitation. We may adopt this for the project area as it is nearest among the 22 stations. Though the conditions prevalent at Cuttack and Belghar are not identical, this has been accepted as there are no other reliable data.

2. The area of the project is 30,000 ha. Taking average rainfall as 140 kk. the total volume of water received is 42150 ha. m.. Out of this 42·3 ·/. is available as run-off which comes to 17130 ha. m.. The balance 24·320 ha. m. either seeps into the soil or is lost as evapotranspiration. On an average the total water lost due to evaporation is 32·3 ·/. . If we accept this for the project area it comes to 13598 or say 136·00 ha. m. . The balance 1,012 ha. m. seeps into the soil. About 54 ·/. of this e. g. 5,789 or say 5,800 ha. m. remain in the top layers and contributes to soil moisture which is essential for the growth of vegetation. The balance 4,920 ha. m. represents annual resource of ground water. The percentage of evaporation see page and ground water recharge as accepted for India as a whole has been adopted for the project area.

Total precipitation water in the project area	.. 4,2150 ha.m.
Seepage to top layers of the profile	.. 580 ha.m.
Ground water recharge	.. 4,920 ha.m.
Evaporation loss	.. 1,3600 ha.m.
Surface run-off	.. 17,830 ha.m.

3. Since there is very little scope for construction of any minor/medium irrigation projects (due to undulating and rolling topography, submergence of valley land and difficulty in water conveyance) the only way left is to construct small water harvesting structures. Moreover by different soil and water conservation measures seepage of water to the soil profile is to be increased which will store sufficient moisture to tide over drought periods and to reduce flood hazards down stream. This will also ensure lean seasons flow in the streams by slow release of water seeped in the soil profile.

4. Out of 17,830 surface run-off it is proposed to utilise 25 per cent or 4,460 ha.m. by diverting for irrigation including waters spreading for recharge of ground water and allow the balance 75 per cent or 13,370 ha.m. to pass down in the streams for use down below. The 4,460 ha.m. of water will be diverted by 94 water harvesting structures (80 proposed + 14 existing).

5. The data on quality of water flowing in the two catchment areas of Vanshadhara and Mahanadi rivers in the project area for agricultural purposes is not available. However, no adverse report has come to our notice and water appears to be normal.

Prediction of design plate run-off rate (for water harvesting structure)

6. It is suggested that while designing small water harvesting structures Rational formula is adopted. The method of calculating maximum run-off by use of this formula is the oldest, simplest and possibly the most consistent one. The Rational method of predicting design plate run-off rate is expressed by the equation.

$$+Q=CIA$$

Where Q=design plate rate of run-off is cum./sec.

C=Run-off co-efficient

I=Intensity of rainfall in mm./hr. for the design recurrence internal and for a duration equal to the time of concentration of the mini/micro watershed.

A=Area of watershed in hectare

7. An estimation of peak rate of run-off by rational formula considered sufficiently accounts for design of relatively inexpensive structure where consequences of failure is limited. Application of this formula is generally limited to watersheds up to 12-13 Sq.km. or 1200 to 1300 ha. To facilitate design of structure the value for C (run-off co-efficient) in Rational formula is given in the Table.

TABLE 4·2·2

Value of C (Run-off coefficient) in Rational formula

Vegetative cover and slope (topography of watershed)		Soil texture		
		Sandy loam	Clay and silt loam	Stiff clay
(1)	(2)	(3)	(4)	(5)
Cultivated land				
Flat	0—5%	0·3	0·50	0·60
Rolling	5—10%	0·4	0·60	0·70
Hilly	10—30%	0·52	0·72	0·82
Pasture land				
Flat	0—5%	0·10	0·30	0·40
Rolling	5—10%	0·16	0·36	0·55
Hilly	10—30%	0·22	0·42	0·60
Forest land				
Flat	0—5%	0·10	0·30	0·40
Rolling	5—10%	0·25	0·35	0·50
Hilly	10—30%	0·30	0·50	0·60

8. Run-off co-efficient is defined as the ratio of maximum rate of run-off to the uniform rate of rainfall with a duration equalling or exceeding time of concentration which produced this rate of rate.

TABLE 4·2·3

Average Rainfall (in mm)

Ref : Control of shifting cultivation in Belghar Report : KKDA

Recorded at Tumudibandh

Year	Jan.	Feb.	March	April	May	June	July	August	Sept.	Octo.	Nov.	Dec.	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
1980 ..	8·48	..	22·79	15·92	41·48	210·07	302·95	257·65	300·51	67·44	9·44	8·04	1244·47
1981 ..	33·37	10·68	96·15	30·55	48·92	136·94	181·22	475·19	371·60	18·91	..	..	1403·53
1982 ...	1·32	10·68	119·78	50·28	43·95	99·88	247·66	711·25	69·09	33·66	..	..	1387·40
1983 ..	..	95·80	13·75	22·25	39·00	156·52	290·00	274·58	314·40	89·40	..	..	1295·70
1984 ..	6·00	..	..	95·10	35·50	302·60	259·70	350·30	164·90	12·70	..	..	1226·80
1985 ..	28·10	12·40	..	15·30	55·20	151·80	303·70	347·13	496·77	125·00	..	..	1535·40
1986 ..	32·00	52·70	1·50	23·50	26·60	418·65	434·50	301·50	83·32	56·00	37·00	9·00	1466·27
	(1)	(5)	(2)	(6)	(5)	(13)	(18)	(10)	(7)	(5)	(3)	(3)	(84)
1987 ..	17·0	..	23·50	30·00	103·50	116·40	194·20	199·90	67·00	109·00	45·00	..	905·5
	(1)	(—)	(4)	(2)	(6)	(6)	(15)	(14)	(11)	(8)	(8)	..	(75)
1988 ..	..	42·2	1·4	59·3	200·0	196·0	368·6	302·4	264·8	28·2	..	..	1463·5
		(1)	(1)	(6)	(6)	(11)	(20)	(22)	(14)	(2)	..	..	(83)
1989 ..	..	..	16·0	..	46·3	467·4	225·0	159·4	90·2	6·8	..	..	1011·1
			(2)		(4)	(16)	(14)	(19)	(13)	(2)	..	..	(70)
1990 ..	..	43·2	68·4	129·6	212·0	368·0	352·8	712·4	255·8	274·2	93·7	5·0	2515·1
		(6)	(4)	(6)	(7)	(14)	(17)	(18)	(13)	(13)	(4)	(1)	(103)

Population

1. The total population as per 1991 Census is not available. Hence population as per 1981 Census has been taken as base figure. Population growth rate of 20 per cent over 1981 population figures has been taken to arrive at the populatipn figure of 1991.

2. There are in all 80 villages in the proposed project area. Of these 70 are Kutia (Scheduled Tribe) villages and 10 are non-Kutia villages. The population of these 80 villages is 6,038 (3,998 for 70 Kutia villages/hamlets and 2,040 for ten non-Kutia villages). 20 per cent of 6,038 is 1,206, so total population in 1991 is 6,038+1,206=7,244 or say 7245·88 per cent of it is taken as adult equivalent. Thus adult equivalent population of the project area comes to 6,376 or say 6,380.

3. Requirement of foodgrains, pulses, oil-seeds, fuelwood per year is indicated below : —

Foodgrain—Requirements of cereals per adult/year is 198·7 Kgs. Annual requirement—198·7×6,380=1,268 tonnes. *Add* 317 tonnes (25 per cent) representing seed, wastage and for emergency requirement. Thus it is 1,268+317=1,585 tonnes.

Pulses—Requirement of pulses per adult per year is 31 Kgs. Annual requirement —31 Kgs.×6,380=198 tonnes. *Add* 50 tonnes (25 per cent) representing requirements of seed, feed, wastage and emergency. Thus total requirement comes to 198+50=248 tonnes.

Oil-seeds—Requirement of oil-seeds 42 Kgs. (14 Kgs. oil) per adult per year. Annual requirement—42 Kgs.×6,380=268 tonnes. *Add* 67 tonnes (25 per cent) representing requirement of seeds, feed, wastages and emergency. Thus total requirement per year is 268+67=335 tonnes.

Fuelwood—Requirement 4·5 cum. per adult per year. Total requirement is 4·5×6,380=28,710 cum. 1 cum. of wood=725 Kgs. (general). Therefore, requirement of fuelwood 28,710×725 Kgs.=20,815 tonnes.

Fodder—Requirement of fodder per head of cattle/per day is 8·34 Kgs. green fodder, 0·96 Kg. concentrates and 4 Kgs. of dry fodder. The total cattle population in the area is 5,469 numbers. So the annual requirements of green fodder, concentrates and dry fodder are 456 quintals, 53 Qtls. and 219 Qtls. respectively.

4. In addition to this, additional fodder is necessary for other livestock population. All the requirements of foodgrains, pulses, oil-seeds, fuel and fodder need to be grown in the area. In addition, surplus foodgrains, etc., need to be grown for exchange/sale to meet other requirements of the area. Taking into consideration the soil, water resources of the area and prevalent favourable climatic conditions, horticultural, medicinal and forest species can be grown to supplement income of the local people.

Soil and Water Conservation

The primary objectives of soil and water conservation projects are to minimise soil erosion, land degradation, vegetative denudation, shifting cultivation and restoring the environmental equilibrium and increasing productivity of the land. For this problems of land and water management have been identified, gross erosion rate has been assessed, the strategy to be adopted has been indicated, different anti-erosion measures have been suggested, besides funds required, labour to be generated, impact on environment, etc., have been indicated.

Problems encountered in the area

(1) *Shifting Cultivation*—The total area as measured from the map enclosed is 27,000 Ha. But taking into account the undulating end rolling topography of the project area, it would be 30,000 Ha. According to informations furnished by local Forest Officers the total area affected by shifting cultivation is as follows:—

1200 Ha. in Reserve Forest areas of 10648 Ha.

2300 Ha. in proposed Reserve Forest area of 4949 Ha.

500 Ha. in other Forest areas of 8031 Ha.

Thus area affected by shifting cultivation is 4000 Ha. in 23,628 Ha. of forest land. In addition. certain other revenue land (waste land) are also affected by shifting cultivation. This area contributes maximum sediments by erosion. Also the soil fertility is lost and consequently production from land is less.

(2) *Waste land*—The land-use statistics obtained from the Kutia Kandha Development Agency records, it is seen that the total cultivable waste land is 2476 Ha. Almost every area is cultivated but unbunded and are subjected to severe sheet, rill and moderate gully erosions. These land need to be bunded and levelled for better in situ-grain water management.

(3) *Gully erosion*—Since the area has fairly good vegetative cover and the forest area constitutes about three-fourth of the total area, gully problem is not very alarming. However, gullies have appeared and unless measures are taken, it will advance further. Gully erosion contributes maximum sediments to the streams and takes land out of cultivation. To prevent gully appearing at the foothills due to concentrated flow of run-off, diversion bund with safe disposal facilities need to be provided.

(4) *Stream Bank erosion*—There are large number of streams, streamlets which emerge from the hills and the banks on either side are subject to bank cutting and collapse of the high banks. Consequently, good land vanishes in the stream. Since the streams originate from the hills, flash flood, appears frequently. Due to meandering nature of streams, there is unequal collapse of bank on either side. This has made establishing communication lines difficult apart from loss of good cultivated land.

(5) *Undulating and slopy land*—The area is hilly, extremely slopy and undulating. The slope directions are also complex, e. g., multi-directional. This has made water management extremely difficult. Even minor irrigation projects cannot be taken up due to difficulty in water conveyance. Moreover, minor irrigation projeets will entail in submergence of some good low land now being utilised for paddy cultivation.

(6) *Soil acidity*—Due to heavy monsonic rain and leaching out of cateous, like calcium and magnesium, the soils have become acidic. This brings about various imbalances in soil acidity, barring the valley bottom land, these lands need to be neutralised suitably. About 5000 Ha. of cultivated land need to be treated with suitable soil amendment by increasing organic matter content through green manuring, addition of compost, farm yard manure, etc.

(7) *Lack of irrigation*—As indicated earlier, there Is very little scope for providing flow irrigation through minor irrigation projects. However, taking advantages of small streams (some are perennial), a number of low cost water harvesting structures can be constructed in the primary and secondary streams and gullies in the upper reaches. The water can be diverted to adjacent mini commands. The mini catchment should also be protected by plantation and other measures. As a matter of fact, a number of such projects have already been constructed with available funds of ITDA, Balliguda by Soil Conservation Organisation at the district level.

(8) *Lack of adoption of dry farming technique and in situ water management*—Due to terrain condition and eratic monsoons it is not possible to provide irrigation water to all the cultivated land. Therefore adoption, of dry land techniques for *in situ* management of rain water is needed. For this the Agriculture and Soil Conservation Extension Services need to be geared up.

(9) *Land settlement not done*—Though this is not directly related to soil and water conservation but it has direct bearing. Unless the land occupied by the Kutias are settled in their favour, there cannot be any incentive to take up any development work. Unless the Kutias are made the owner of the land, they cannot avail any financial benefit (credit worthiness) from the financing institutes. Moreover, land once settled should not be allowed to be transferred to non-tribals.

(10) *Diversion of land for creation of new reserve forests*—At present there are 10,648 Ha. of notified reserve forest area. This represents more than 33 % of the total geographical area. Now local forest officers have proposed to include another 4,949 Ha. in the reserve forests. Since the land proposed now may have areas which can support good horticultural/agricultural crops (which is essential for improving the economic condition and employment), it should not be included in reserve forests. Moreover, planting of horticultural and cash crops may prevent shifting cultivation by providing gainful employment to the tribals.

Gross erosion rate from the project area

The project area is covered by two catchments (part) of Mahanadi and Vansadhara rivers. Utei is a watershed of sub-catchment of Tel and catchment of Mahanadi. Similarly is a tributary to river Vansadhara which directly discharges to Bay of Bengal. The project is hilly and undulating. The average slope is 10-15 %. This provides extra energy to run off to cause serious erosion problem. The gross erosion depends on two factors (1) watershed factors which includes area of watershed, topography, drainage density, drainage pattern, soil land-use and cover conditions and (2) climatic factors like precipitation, its intensity and duration, temperature, wind direction, etc. The topography is rolling and undulating with high steep areas. The drainage density and pattern is governed by geology and precipitation. Since the area receives intense rainfall during 3-4 months of the year aggregating to 100 cm. or more, it causes serious erosion problem. The area is affected by shifting cultivation which accelerates soil erosion as vegetative cover is reduced. As the area is hilly, wind erosion or wind direction does not affect seriously soil erosion problem. Here an attempt has been made to calculate gross erosion rate using universal soil loss equation (USLE). It is stated as follow : —

$$A = RKLSCP$$

where A —Soil loss in tonnes per unit area

R —Rainfall erosion factor

K —Soil erodibility factor

LS —Length slope factor

C —The cover and management factor

P —Erosion control practice factor

Though the value for different factors are not available for the project area, the values given by the Ministry of Agriculture and ICAR have been adopted.

R —629 (for Jharsuguda)

K —0·35 (Silt+fine sand 60 %, Org. matter 1 %)

LS —1·5 (40 m. length, 10 % slope)

C —0·32 (cultivated fallow)

P —0·6 (10 % slope, 40 m. length)

Computed value of soil loss in tonnes per Ha./year —$629 \times 0{\cdot}35 \times 1{\cdot}5 \times 0{\cdot}32 \times 0{\cdot}6 = 41{\cdot}38$ tonnes. All the sediment indicated above may not reach the main drainage channel, as some may be deposited enroute. However, considering the topography and precipitation characteristic major part of this may be discharged to the streams. It may be mentioned here that Utei Medium Irrigation Project (Dam) in adjacent to Kalahandi district is the main point of deposition of sediments. Similarly the bed of river Vansadhara is getting the sediments from Vansadhara catchment in the project area. This is resulting in raising of river-bed. This rise of the river-bed was responsible for devastating flood of September 1980 which submerged Subdivision town of Gunpur in adjacent Koraput district. Therefore, protection of this catchment will not only stabilise production from the project area but will considerably reduce silt inflow to Utei Dam in Kalahandi and will moderate both flood and drought in Koraput district.

The strategy

1. The work would be executed on watershed basis. There are a number of micro-watersheds within the two catchment of Vansadhara and Mahanadi river systems in the project area. The two soil conservation ranges now functioning in the project area are in charge of one river system each.

2. Conservation, upgradation and utilisation of natural endowments like, land, water, plant, animal and human are to be taken up in a harmonious and integrated manner.

3. Generation of massive employment, wean away people from shifting cultivation, in addition, this would endeavour to enhance cash available to local labourer's through increased employment and marketable surplus.

4. Improvement of production environment and restoration of ecological balance through *in situ* moisture conservation and mangement. Network of run-off management structures and devices for providing life saving irrigation will be attempted.

5. Food, fodder and fuel production will be enhanced.

6. Promoting people's participation in the implementation of the project and assets so created.

Implementing agency

The project will be implemented through the local functionaries of soil conservation organisation at the district level with active involvement of the people of the area. Overall co-ordination will be taken up either by Tribal and Harijan Research and Training Institute or through the local ITDA. The Directorate of Soil Conservation will render technical asistance and supervison of the works as per their departmental practices.

Soil and Water Conservation measures suggested

The problems encountered in the project area has been briefly enumerated earlier. To reduce the intensity of the danger of erosion and for judicious use of land and water resources the following measures are suggested to be undertaken.

1. *Land Development*—Out of 2,200 Ha. of waste land, 750 Ha. have already been bunded. It is proposed to develop 1,000 Ha. of this land by way of bunding and levelling. Levelling, particularly microlevelling is necessary for increased infiltration of water. The cost involved is Rs. 2,500 per Ha. The total cost comes to Rs. 50·00 lakhs, during 4 years of execution. The rest area will be developed by the owners themselves.

2. *Gully Control*—The area is infested with gullies particularly near high bank and foot-hill areas. It has been proposed to stabilise 44 numbers of gullies at a cost of Rs. 11·00 lakhs. In addition, Rs. 0·98 lakh will be spent on maintenance of these gullies including 8 existing gullies which has been treated earlier. Thus the total amount comes to Rs 11·98 lakhs over a period of 4 years.

3. *Water Harvesting Structures*—It is proposed to construct 80 numbers of water harvesting structures at a cost of Rs.200 lakhs. In addition, the existing 14 numbers are to be maintained along with maintenance of the new projects (60 Nos.) at a cost of Rs. 10·56 lakhs over a period of 4 years. The water harvesting structures are expected to irrigate 1,880 Ha. in Kharif. In addition, there are perennial streams which are expected to irrigate about 800 Ha. during Kharif. These projects will generate enough labour for the local inhabitants. This will wean them away from the practice of shifting cultivation.

4. *Stream Banks erosion control*—20 Kms. of vulnerable stream banks will be treated to prevent bank cutting by the run-off during floods. The cost will be Rs. 4 lakhs for original work and Rs. 0·30 lakh for maintenance. Thus the total expenditure on this account will be Rs. 4·30 lakhs.

5. *Diversion Bunds*—Vulnerable spots below the foothills will be provided with diversion bund for safe discharge of run-off from the hills. It is proposed to give diversion bunds over a distance of 20 Kms. The original cost is Rs. 4·00 lakhs and that for maintenance is Rs. 0·30 lakh over a period of 4 years.

6. *Sisal Plantation*—From experience it is seen that sisal (for fibre) is coming up well in the project area. There are 40 Ha. of sisal plantations in good condition which is proposed to be handed over to beneficiaries (small/marginal/landless) for extraction of fibre. It is proposed to cover another 160 Ha. at a cost of Rs. 15·36 lakhs. The cost on maintenance of the new plantations during four years will be Rs. 7·92 lakhs. Thus the total amount required is Rs. 23·28 lakhs over a period of four years. At the end of the fourth year the plantation are to be distributed among eligible beneficiaries.

7. *Jhola Land Protection*—There are 11 such projects already executed. It is proposed to execute 10 more projects. The total cost of 10 projects is Rs. 4·4 lakhs and a sum of Rs. 1·18 lakhs will be required for maintenance. Thus total requirement of funds will be Rs. 5·58 lakhs over a period of 4 years.

8. *Miscellaneous Plantation*—It is proposed to cover 400 Ha. under this item of work. The cost on original and maintenance work over a period of 4 years will be Rs. 25·3 lakhs as per norms indicated below—

1. Original plantation	..	Rs. 4,900 Ha.
2. Maintenance	..	Rs. 1,400 Ha. 2 years
3. Maintenance	..	Rs. 500 Ha. in 3 years
4. Maintenance	..	Rs. 500 Ha. in 4 years
5. Meintenance	..	Rs. 500 Ha. in 5 years

9. *Conservation Farming Demonstrations*—Many cultivators report to conventional farming systems knowing little that such practices accelerate soil and water loss from their fields. In order to demonstrate different conservation measures like contour ploughing, contour strip cropping, growing of erosion resisting crops, adoption of suitable crop rotation, better technologies for higher yield, etc., it is proposed to demonstrate conservation farming technology to the farmers on their land. This will act as demonstration plots. It is proposed to lay out these demonstrations over 240 hs. @ Rs. 2,500 per ha.. The total cost will be Rs. 6·0 lakhs for four years.

10. *Liming of acid soils*—The soils of the area is acidic except valley bottom land. It is proposed to apply lime sludge @ 2·5 tonne per ha. The total area to be covered is 2000 ha, at a cost of Rs. 6·0 lakhs spread over 4 years. Lime sludge is available in the J. K. Paper Mill, Rayagada. This amount will be mostly spent on transportation of lime sludge from J. K. Paper Mill, Rayagada to different sites and its application to the respective fields.

Training of farmers in land development and water management and organising Bhumi raksha mela

It is proposed to train 400 farmers during four years at a cost of Rs. 2·0 lakhs in actual execution of different conservation measures in centrally located villages for 7 days each. The main message in the training strategy will be soil and water conservation and the integrated farming approach. The message will be simple and in the local language which may be communicated to people in a limited time. It will have local relevance. The training materials, posters, charts and printed materials would be in simple language. Audio-visual aids will be used. During these seven days they will be trained to identify soils, layout contours, the use of hand levels, identify different erosion permitting and erosion resisting crops, use of improved seeds, fertiliser application, water harvesting technology and water management, dry farming, etc. During the training period the beneficiaries will be suitably accommodated in school/panchayat/club buildings. They will also be provided with boarding facilities and some incentives to compensate their loss of wages during the period of training. The trainers will also be suitably remunerated.

Vegetative bunds with khus grass has not been recommended as it does not come up well in hilly tracts of Orissa and has certain definite disadvantages like ; it is brownised, its seeds germinate, it becomes weed after sometimes, etc.

The cost on the above items from 1—11 is as follows :

1.	Land development	..	50·00 lakhs
2.	Gully control measures	..	11·98 lakhs
3.	Water harvesting structure	..	210·56 lakhs
4.	Stream Bank erosion control	..	4·30 lakhs
5.	Diversion bund	..	4·30 lakhs
6.	Sisal plantation	..	23·28 lakhs
7.	Jhola land protection	..	5·58 lakhs
8.	Conservation farming	..	6·00 lakhs
9.	Misc. plantation	..	25·30 lakhs
10.	Liming of acid soil	..	6·00 lakhs
11.	Training of farmers	..	2·00 lakhs
	Total cost on measures	..	349·30 lakhs

Generation of Employment

One of the objectives of the scheme is to generate employment for the local people simultaneously increasing production from land by rationally utilising land and water resources (Natural resources) of the area. Generation of gainful employment to a great extent will wean away people from shifting cultivation. Statement 4 indicates generation of employment (mandays of labour) by execution of various soil and water conservation measures.

TABLE No. 4·2·4

Statement showing generation of employment

Rs. in lakhs
Labour generation in mandays wages @ Rs. 25 per day/man

Sl. No. (1)	Items of work (2)	1st year (3)	2nd year (4)	3rd year (5)	4th year (6)	Total (7)
1	Land development .. 80% labour, 20% material	Rs. 10·00 40,000 Nos.	Rs. 10·00 40,000 Nos.	Rs. 10·00 40,000 Nos.	Rs. 10·00 40,000 Nos.	Rs. 40·00 160,000 Nos.
2	Gully control .. 50% labour	Rs. 1·29 5,160 Nos.	Rs. 1·59 6,360 Nos.	Rs. 1·65 6,600 Nos.	Rs. 1·46 5,840 Nos.	Rs. 5·99 23,960 Nos.
3	Water harvesting structure .. 60% material, 40% labour	Rs. 20·34 81,360 Nos.	Rs. 20·82 83,280 Nos.	Rs. 21·30 85,200 Nos.	Rs. 21·78 87,120 Nos.	Rs. 84·24 336,960 Nos.
4	Stream bank erosion control .. 50% labour, 50% material	Re. 0·50 2,000 Nos.	Re. 0·25 2,000 Nos.	Re. 0·55 2,200 Nos.	Rs. 0·575 2,300 Nos.	Rs. 2·150 8,600 Nos.
5	Diversion bund .. 80% labour, 20% material	Re. 0·80 3,200 Nos.	Re. 0·84 3,360 Nos.	Re. 0·88 3,520 Nos.	Re. 0·92 3,680 Nos.	Rs. 3·44 13,760 Nos
6	Sisal plantation, 66% material, 34% labour on original work. 50% labour & 50% material in maintenance.	Rs. 1·28 5,120 Nos.	Rs. 1·94 7,760 Nos.	Rs. 2·60 10,400 Nos.	Rs. 3·26 13,040 Nos.	Rs. 9·08 26,32 Nos.
7	Jhola land protection, 50% labour .. 50% material	Re. 0·51 2,040 Nos.	Re. 0·64 2,560 Nos.	Re. 0·67 2,680 Nos.	Re. 0·70 2,800 Nos.	Rs. 2·72 10,080 Nos.
8	Misc. plantation, 50% labour, .. 50% material	Rs. 3·68 14,720 Nos.	Rs. 4·78 19,120 Nos.	Rs. 5·1 20,400 Nos	Rs. 5·5 22,000 Nos.	Rs. 19·06 76,240 Nos.
9	Conservation farming .. 30% material, 70% labour	Rs. 1·05 4,200 Nos.	Rs. 1·05 4,200 Nos.	Rs. 1·05 4,200 Nos.	Rs. 1·05 4,200 Nos.	Rs. 4·20 16,800 Nos.
10	Liming of acid soils, 20% labour .. 80% transportation and material cost	Re. 0·30 1,200 Nos.	Re. 0·30 1,200 Nos.	Re. 0·30 1,200 Nos.	Re. 0·30 1,200 Nos.	Rs. 1·20 4,800 Nos.
11	Training of farmer, 30% labour, .. 70% material.	Re. 0·15 600 Nos.	Re. 0·15 600 Nos.	Re. 0·15 600 Nos.	Re. 0·15 600 Nos.	Re. 0·60 2,400 Nos.
	Total ..	Rs. 39·90 159,600 Nos.	Rs. 42·36 170,549 Nos.	Rs. 44·25 177,000 Nos.	Rs. 45·695 182,780 Nos.	Rs. 172,205 689,920Nos

From table No. 4·2·4 it will be seen that a sum of Rs. 172·48 lakh will be spent on labour and 689,920 mandays of labour will be generated. The wage-rate has been taken at Rs. 25 per day per labour.

$$\frac{689920}{4 \text{ years}} = 172480 \text{ mandays of labour will be generated per year.}$$

$$\frac{172480}{300 \text{ days}} = 575 \text{ mandays of labour will be generated per day in the project area.}$$

Other sectoral activities will also generate labour. In addition increased agricultural activities particularly irrigation and plantation development will also generate additional labour during lean agricultural season. Taking into consideration the number of households in the project area (1025 in 70 Nos. of Kutia village) it is felt all adult members will get employment round the year. This will no doubt ensure weaning away shifting cultivators to regular activities outside the shifting cultivation area. But it should be ensured that the ideal population are engaged in the work. If outsiders are engaged, then very purpose of the scheme will be defeated. Of course in selected items of works, outsiders can be inducted in restricted number if local talents are not available.

Staff and infrastructure

4·2·13. *Staff*—At present two Range Officers (Soil Conservation) with supporting staff have been posted in the project area. Considering this work-load now envisaged, there may not be necessary for creating of any new post, as the two ranges will be able to take up this work. Since this is a four year work programme, if any additional staff is necessary, the line department of Soil Conservation may divert them from other places of the district. However, incentive/project allowance @ 20% of the basic pay of the staff are to be provided. For this a sum of Rs. 0·40 is provided.

Building—4·2·14. At present there is no office building, godown or staff quarters or as a matter of fact there is no building of any kind to accommodate the range officers, materials or staff. It is, therefore, proposed to spend 4% of the charge on works on soil and water conservation measures (4% of Rs. 349·30 lakhs.)for construction of buildings.

This comes to Rs. 13·972 or Rs. 14·0 lakhs as follows :

1. Office Building for 2 Range Officers	3.0	2·0 lakhs
2. Godowns for two ranges		2·0 lakhs
3. Range Officers quarters 2 Nos		2·5 lakhs
4. Ten surveyors quarters		7·5 lakhs
		14·0 lakhs

All the buildings are to be constructed at Belghar.

TABLE 4·2·5

Total cost of the project

Rs. in lakhs

	1st year	2nd year	3rd year	4th year	Total
1. Soil Conservation measures.	81·18	86·24	89·54	92·34	349·30
2. Buildings	14·00	..	..	..	14·00
3. Incentive allowance	0·10	0·10	0·10	0·10	0·40
Total ..	95·28	86·34	89·64	92·44	363·70

Phasing of the programme of works

4·2·15—The proposed measures have been spread over a period of four years to facilitate easy execution and smooth outflow of the financial requirements as well as physical achievements Table No. 4·2·3 indicates annual allotment for labour generation and actual labour to be generated. Table No. 4·2·5 indicated

4·3. Agriculture

4·3·1. The post-independence Development Experience in Individual Sectors and their efficacy in economic growth of the area.

After independence some concrete steps were taken to change the economic condition of the tribal people. New strategies were evolved for planning towards the development of the tribal area and tribal communities. A new strategy, called Tribal Sub-plan was initiated during the 5th Plan period. The Tribal Sub-plan aims at comprehensive development of tribal people. It was felt to form action plans for the development of primitive tribes. These are known as micro projects. The Kutia Kandha Development Agency is a Micro project set up for the alround development of the Kutia Kandhas. The Kutia Kandhas used to adopt the primitive methods of cultivation and especially shifting cultivation in their areas. Due to the initiation of the Kutia Kandha Development Agency, the Kutias came to know different types of crops and their culture. Beforehand they were only aware of the shifting cultivation which brought malady to the people. The improved method of cultivation, high-yielding varieties of crops, efficient fertiliser use, better management of soil and water were introduced and thereby, the economic growth of the area was contemplated.

4·3·2. Initiation of the agricultural scheme and amount spent in implementation.

The scheme started functioning at the initiation of the Kutia Kandha Development Agency from 16th June 1978. However, no separate expenditure for Agricultural Development Schemes has been maintained separately by the Agency for different years. The recent data available in this aspect are given below:—

Name of the scheme	Financial outlay for 5 years (in Rs.)	Fund released (in Rs.)	Financial Achievement till the end of 1990-91 (in Rs.)
Agriculture ..	1400,000·00	1503,158·95	1171,584·00

Physical target and achievement up to the end of the year 1990-91

Scheme	Target for 5 years	Achievement during 1990-91	Cumulative Achievement up to the end of year 1990-91
(1)	(2)	(3)	(4)
(*a*) Implements (Sets) ..	1200	160	668
(*b*) Seeds (Qnts.) ..	970·000	312,520	718,520
(*c*) Plant Protection measures (Hects.).	865,000	317·000	557·000
(*d*) Manures and Fertilizers (Qt.).	1200,000	819,400	1219,400

4·3·3. *Basic Data* CAs per Agency Record

1. Area of the project .. 30·000 hect.
2. Total cultivable Area .. 1550·50 hect.
3. The area under different category of lands are as follows—
   - (*a*) Low land .. 281·873 hect.
   - (*b*) Medium land .. 141·720 hect.
   - (*c*) Upland .. 866·965 hect.
   - (*d*) Cultivable waste land .. 2475·543 hect.
   - (*e*) Uncultivable waste land .. 2102·778 hect.
   - (*f*) Gochar .. 190·390 hect.
   - (*g*) Rakhita — 312·221 hect.

4·3·4. *Cropping*—There are two distinct cropping seasons in this region, namely,Kharif and Rabi. In Kharif season cereals, like, *Biali* and *Sarada* paddy are grown. The millet crops like maize, ragi, jowar to some extant are taken up. Among the pulses, arhar is grown widely. Besides, oil-seeds like niger, castor are generally taken up.

4·3·5. In Rabi season, *Dalua* paddy is taken up wherever water is available. Green gram and black gram are generally grown. Soyabean has just been introduced. Among the oil-seeds, mustard is grown widely in the area including sunflower as a rainfed crop Besides, crops like maize, groundnut are also grown where irrigation facilities are available.

4·3·6. *Intensity of cropping*—Mostly paddy is taken as a monoculture crop. But due to awarasness of improved agriculture, people have started growing double crop in a very limited extent.

4·3·7. *Crop cutting*—In a very limited extent crop cutting experiments have been taken up in crops, like, paddy, maize and mustard by the joint venture of Agriculture Department and Directorate of Economics and Statistics. These experiments reveal that if proper attention is given to cropping, higher yields can be obtained as follows:—

Sl. No.	Name of the crop	No. of crop cutting	Yield in quintal per hectare	
			A	B
(1)	(2)	(3)	(4)	(5)
1	Paddy —	60	16	26
2	Maize ..	60	14	18
3	Mustard ..	60	8	10

The average yield of the above crops is near about the half of the lowest yields as recorded by the crop cutting experiment as shown in column marked as 'A'. The farming families may be made aware of higher production by organising training camps in crop production.

4·3·8. *Area of cropping*—It is ascertained from the data given by the Agricultural Extension Officer, Belghar that paddy is grown to an extent of 777 hectares in 79 villages under K. K. D. A., Belghar. The area under non-paddy crops comes to 684·55 hectares. Non-paddy crops include maize, ragi and other crops, No actual

data are available about irrigation in both the seasons. However, the Agricultural Extension Officer, Belghar has calculated that irrigation to the extent of 175 hectares are available during the Rabi season. The sources are mainly hill streams and water harvesting structures. In Kharif, the crops are grown under rain and supplemental irrigation is given from Hill stream where available. Food requirement of Kutia Kandhas and the non-Kutias and their attainment of self-sufficiency from the available data by 2000 A. D. are given below:—

4·3·9. The population as per 1981 Census :

Kutia Kandhas	..	3,859
Non-Kutia	..	2,179
Total	..	6,038
The population will be increased by 20 per cent		1,206
by 1991 A. D.	..	7,244
So, the adult equivalent is	..	$\frac{7244 \times 88}{100}$ = 6,376 or say 6,380 persons.

Requirement of Food-grains. .. Requirement of cereals per adult/year is 198·7 Kg.

Anunal requirement = 198·7 × 6380 = 1268 tonnes *Add* 317 tonnes is (25 per cent) representing seed, wastage and for emergency requirement. Thus, it is 1268 + 317 = 1585 tonnes.

Requirement of Pulses .. Requirement of pulses per adult per year is 31 Kgs. Aunual requirement-31 Kgs. X6380 = 198 tonnes. *Add* 50 tonnes (25 per cent) representing requirements of seed, feed wastage and emergency. Thus, total requirement comes to 198 + 50 = 248 tonnes.

Requir e m e n t of oil-seeds. .. Requirement of oil seeds 42 Kgs. (14 Kgs. oil) per adult per year. Annual requirement = 42Kg. × 6380 = 268 tonnes. *Add* 67 tonnes (25 per cent) representing requirement of seeds, feed, wastage and emergency. Thus, total requirement per year is 268 + 67 = 335 tonnes.

There will be no difficulty in producing these requirements if package of practices and improved type of cultivation are followed in the area.

4·3·11. *Action Plan for Agricultural Development from 1992 to 1996* —The Kutia Kandha Development Agency since its inception has taken up some development work in Agriculture. But although twelve years have passed, the Kutias are not fully aware of the recent technology of agriculture found in our State. They are somewhat in a state of primitive agriculture and it is necessary that the recent techniques of crop production should be known to them for getting higher production of different crops. The action plan proposed for 1992—1996 is stated below :—

(1) Rice Development Programme

(2) Prevention of Shifting Cultivation

(3) Training of Farm Families

(4) Agricultural Implement Distribution and Availability Programme

(5) Infrastructural Development Programme

The detailed programme on each of the above items is described below :—

(1) Rice Development Programme

Rice is grown in all the villages of Balghar and Gumma Panchayats since long. The area under rice is about 606 hectares in Kharif and 170 hectares in Rabi season. The crop cutting experiments have proved that rice yield has gone upto 26 quintals per hectare while the average yield is less than 8 quintals per hectare. So it is planned to conduct demonstrations on rice crops in all the 68 Kutia villages of the agency taking atleast one in each village.

Purpose—The very purpose of rice demonstration is to provide latest scientific know-how about growing of high-yielding rice varieties, using adequate quantity of fertilizers and providing plant protection measures when needed and as per routine.

Area and details—The area of each demonstration plot may be 0·5 hectare and the beneficiary growing rice more than half a hectare should be allotted for implementation. The inputs required for the demonstration and the cost are described as under :—

(1) Paddy seeds (HYVP) 31·25 Kg.	..	Rs. 177·00
(2) Seed treating chemicals 31·25 gms.	..	Rs. 20·00
(3) Fertilizers (60:30:30) (Bavistin)	..	Rs. 294·00
(4) Pesticides—Thimet 15 Kg/ha.	..	Rs. 262·50
(5) Miscellaneous expenditure	..	Rs. 46·30
Total	..	Rs. 800·00

Rs. 800·00 per demonstration × 68 villages = Rs. 54,400·00. The amount required per year will be Rs. 54,400·00. The demonstration should be continued for the coming years in the plan period.

(4) Prevention of Shifting Cultivation

The major occupation of Kutia Kandhas and the non-Kutias is Podu cultivation. From Podu they get very less yield from different crops they grow in the region. The cultivation is unscientific and no attention is given for adoption of the latest technology for growing different crops for higher production. So it is planned to rehabilitate the podu cultivator by providing input assistance for growing different crops in the lands available for the purpose. Thus every year the Podu cultivators will give up cultivation of one-fourth of the land under Podu (400 hectares) and in 4 years they will completely abandon Podu cultivation from the entire region and adopt improved methods of cultivation for various crops.

TABLE 4·3·1

Detailed Estimate of Crops to be taken up by the Podu Rehabiiltators of Belghar and Gumma Grama Panchayats for 1992-93

Name of the crop	Area in hectare	Seed in Quintal	Cost in Rs.	Fertilizer	
				Quantity in Quintal	Cost in Rs.
(1)	(2)	(3)	(4)	(5)	(6)
Kharif					
Hy Paddy ..	68·00	42·50	24,004·00	250·24	37,740·00
Maize ..	58·00	8·70	6,960·00	285·36	45,530·00
Ragi ..	40·00	4·00	1,760·00	61·26	10,000·00
Arhar ..	8·00	1·60	1,960·00	35·21	4,608·00
Niger ..	9·00	0·90	1,017·00	16·48	2,183·00
Groundnut ..	18·00	22·50	23,634·00	65·07	8,496·00
Total ..	201·00	80·20	59,335·00	713·62	1,08,557·00
Rabi					
Summer Paddy ..	36·00	22·50	12,713·00	177·12	28,246·00
Green-Gram ..	30·00	7·50	9,180·00	88·05	11,520·00
Blackgram ..	32·00	8·00	11,136·00	93·92	12,288·00
Groundnut ..	10·00	12·50	13,125·00	36·14	4,719·00
Mustard ..	45·00	4·50	4,725·00	82·80	13,230·00
Total ..	153·00	55·00	50,879·00	478·03	70,003·00
Grand Total ..	354·00	135·20	1,10,214·00	1,191·65	1,78,560·00

TABLE 4·3·1 —*Concld.*

Detailed Estimate of Crops to be taken up by the Podu Rehabilitators of Belghar and Gumma Grama Panchayats for 1992-93

Name of the crop	Area in hectare	P. P. Chemicals cost	Total input cost (Rs.)	Miscellaneous cost (in Rs.)	Grand Total Rs.
(1)	(2)	(7)	(8)	(9)	(10)
Kharif					
Hy Paddy ..	68·00	38,420·00	1,00,164·00	6,800·00	106,964·00
Maize ..	58·00	11,600·00	64,090·00	5,800·00	69,890·00
Ragi ..	40·00	7,160·00	18,920·00	2,400·40	21,320·00
Arhar ..	8·00	1,464·00	8,032·00	560·00	8,592·00
Niger ..	9·00	2,286·00	5,486·00	540·00	6,026·00
Groundnut ..	18·00	8,010·00	40,140·00	2,700·00	42,840·00
Total ..	201·00	68,940·00	2,36,832·00	18,800·00	255,632·00
Rabi					
Summer Paddy ..	36·00	17,100·00	58,059·00	3,600·00	61,659·00
Greengram ..	30·00	5,520·00	26,220·00	1,800·00	28,020·00
Blackgram ..	32·00	5,888·00	29,312·00	1,920·00	31,232·00
Groundnut ..	10·00	4,450·00	22,294·00	1,500·00	23,794·00
Mustard ..	45·00	7,425·00	25,380·00	2,700·00	28,080·00
Total ..	153·00	40,383·00	1,61,265·00	11,520·00	1,72,785·0
Grand Total ..	354·00	1,09,323·00	3,98,097·00	30,320·00	4,28,417·00

As villagewise data are not available, it is not possible to form programme villagewise. However, cropping plan has been made for the entire Belghar and Gumma G. Ps. taking into consideration the crops raised in the area with available resources. Detailed cropping programme with financial estimate is given in table 4·3·1. The Agricultural Officer of the area in consultation with the Agency administration can take up the programme from 1992 onwards.

The main aim is to divert the Podu cultivators to regular agriculture by providing input assistance so that in the long run they will adopt regular cultivation in a better and scientific way. The amount proposed for 1992-93 is Rs. 4,28,417·00 which will be continued for succeeding years.

(3) Training of Farm Families

The food requirement of Kutia Kandhas has been given in earlier pages. They can be self-sufficient in food as there is vast area for cultivation of different food crops and other crops. In order to be self-sufficient in defferent crops they should be properly trained and know the latest technology for growing different crops. For this purpose training should be imparted to farm families both males and females during Kharif and Rabi seasons.

Training Schedule

Name of the season	Number or training	Time and period	Number of farm families to be trained	Amount required (in Rs.)
(1)	(2)	(3)	(4)	(5)
Kharif	Two	June-July 3 days duration.	34	9,180·00
Rabi	Two	October-November 3 days duration.	34	9,180·00
			Total	18,360·00

A sum of Rs. 1,530·00 may be allotted to 34 families participating in the training per day. This amount includes their daily wages, food and contingencies for purchase of books on agricultural subjects and minimum writing materials.

4. Agricultural Implement, Distribution and Availability of Implements

This programme consists of two parts, namely—(*a*) Distribution of Agricultural Implements, (*b*) Availability of Improved Agricultural Implements at the Agency level.

(*c*) *Distribution of Agricultural Implements*—(1) From the record of the Agency it is ascertained that there are 386 families having 2 acres or more up to 10 acres of land. It is proposed to give one mould board plough with handles costing Rs. 200 to families having bullock pair. The total amount required will be 368 × Rs. 200 = Rs. 73,600. Every year 92 families are to be benefited by this programme and the amount per year will be 92 × Rs. 200 = Rs. 18,400.

(2) There are 491 families having no land. For these families a set of implements consisting of one french hoe, one garden rake and a rake weeder amounting to Rs. 150·00 is to be provided for doing cultivation in their homestead lands. Besides, families having lands up to one acre are also to be provided with these types of implements. The number of such families are 134. So the total number of families are 625. During 1992-93 only 157 families are to be provided with such type of implements and in subsequent years 156 families are to be supplied with these implements.

(b) Availability of Improved Agricultural Implements—A set of implements as indicated below is to be reserved to the Agency level for the use of the cultivators wherever needed :—

1. Mould board plough—5 Nos. .. Rs. 1,000·00
2. Low lift hand pump with pipes—3 Nos. .. Rs. 5,700·00
3. Seed Drill (3 rows hand driven) .. Rs. 2,040·00
4. Bullock 4 pairs .. Rs. 15,000·00

(5) Infrastructural Development Programme

During discussion at Baliguda in the office of the Project Administrator, I.T.D.A., the Assistant District Agricultural Officer pointed out that the staff posted for the project is not sufficient for the implementation of Agricultural schemes in the Kutia Kandha Development Agency. It is said to post more A.E.O. and V.A.W. for the purpose. In view of this it is proposed to post 8 village young men @ Rs. 300 per month to look after 10 villages each instead of posting any extra V.A.W. These youngmen should be literate and should be from the Kandha tribes. The A.D.A.O. will see that these young men are trained by the Agricultural staff of the area to take up the Agricultural work. A sum of Rs. 28,800 will be required per year towards their salary.

4·3·12. *Requirement of funds*—The requirement of funds for the 8th Plan period are as follows:—

Name of the Programme	1992-93	1993-94	1994-95	95-96	Total amount
1. Rice Development Programme	54,400·00	54,400·00	54,400·00	54,400·00	2,17,600·00
2. Prevention of shifting cultivation.	4,28,417·00	4,28,417·00	4,28,417·00	4,28,417·00	17,13,668·00
3. Training of Farm Families.	18,360·00	18,360·00	18,360·00	18,360·00	73,440·00
4. (a) Distribution of Agrl. Implements.	18,400·00	18,400·00	18,400·00	18,400·00	73,600·00
Distribution of Agrl. Implements to landless & marginal. farmers.	23,550·00	23,400·00	23,400·00	23,400·00	93,750·00
(b) Availability of Agricultural Implements.	23,740·00	..	..	..	23,740·00
5. 8 Village Motivators.	28,800·00	28,800·00	28,800·00	28,800·00	1,15,200·00
	5,95,667	5,71,777	5,71,777	5,71,777	23,10,998·00 or say 23,11,000·00

Therefore, an amount of Rs. 23,11,000·00 will be needed for the 8th Plan Period.

4·4·1. The Kutia Kandha families living in the Kutia Kandha Development Agency area of Belghar are estimated to be 1,025 with a population of 4631, though the total population of the area is 7244 spread over 63 Kutia and 10 non-Kutia villages. At the present rate of growth, the population is estimated by year 2000 to be over 9000 of which the effective adult population may be around 7,000 and the development plan is to be for this entire population.

4·4·2. The total cultivable land available in the area as per K. K. D. A. is 1,550·50 hectares and the distribution of the land among the Kutia Kandha land holders is as follows :—

(*a*) 134 families up to 0·40 hectares

(*b*) 196 families, 0·41 to 0·80 hectares

(*c*) 127 families, 0·81 to 2·00 hectares

(*d*) 56 families, 2·01 to 4·00 hectares

(*e*) 7 families, Above 4·00 hectares

(*f*) 505 families, Landless

4·4·3. Besides, the cultivated land of 1,290·558 hectares, as per the settlement figure of the Revenue Department, there is an area of 2,475·543 hectares of land classified as *Abad-Jogya-Anabadi* which can be conveniently converted to cultivated land. In addition, about 5,000 hectares of land have been now demarcated as proposed Reserved Forest and have been placed under the Forest Department. Since this area has not so far been converted to Reserve Forest, a portion of this on the basis of firm requirement worked out for Horticulture Plantations can also be released from the proposed Reserve Forest area.

4·4·4. The average land holding per Kutia Kandha family (about 1·5 hectares) is not very small but the yield per hectare obtained at present being very low, the Kutias are not able to make both ends meet from the existing cultivated land and have to move to the forest for jhumming or Podu cultivation. The farmers follow it as a way of life to supplement their income from the existing land in the absence of any other remunerative occupation. The enclosed list indicates the involvement of families in 58 villages of the Belghar Project Area in Podu cultivation. As per this list, out of 58 villages with the exception of only one village, 'Silkudi', 1200 families including 200 non-Kutia families in the remaining 57 villages are involved in Podu cultivation which means almost 100 per cent involvement of the families in the area in Podu cultivation. This may be further confirmed from the land distribution among the Kutia-Kandha land holders. As many as 49 per cent of the families being landless are bound to go in for Podu. 13·08 per cent families having land up to 0·40 hectare, 19·12 per cent having 0·41 to 0·80 hectares and 12·39 per cent having 0·81 to 2 hectares are also in need of additional land and additional income to make their both ends meet. Only 6·14 per cent families having more than 2 hectares of land may be expected to confine their activities to their own land and not to go for Podu cultivation. But in practice, they also do Podu cultivation along with others. Thus for weaning away the farmers from Podu cultivation, (a) the productivity of their land has to be increased and (b) land from the Revenue Department (Abad-Jogya-Anabadi) and proposed Reserve Forest have to be released to provide at the rate of 3 hectares to each landless family of which one hectare may be in the plain area and two hectares for the other families (at present the podu area per family is reported to be about 2 hectares). For this purpose about 3,000 hectares of land in all will be required and can be conveniently found out from revenue land (A. J. Anabadi) and proposed reserve forest. As per information available with the Forest Department the total land affected by Podu cultivation in Belghar K. K. D. A. area is 4000 hectares including 1200 hectares from the reserve forests. Therefore, it would be worth-while, as a first step for weaning away the Kutias from Podu cultivation, 3000

hectares of land from non-reserve forest may be allotted to them so as to settle them in farming, in which they can utilise their labour profitably. Available labour in the area should be fully utilized in unskilled work, like earth-work in field bunding, water harvesting structures, tree planting, road-making, etc., so that additional income from these sources will supplement their income from farming and sustain them in the initial years. As a matter of fact, such work should be done only with local labour so as to ensure their complete involvement and sense of participation. A simple survey conducted in the area indicated that out of a sample of 108 farmers only eight had year round engagement in agriculture while the remaining had only part-time engagement. Thus, the huge quantity of labour force available in the area can be converted into an asset benefitting both the programmes for the Kutias.

4·4·5. For improving the condition of the farmers in the area, provision of the irrigation facilities, use of improved seeds, pesticides and fertilizers, which will result in increasing the per hectare yield, are highly essential. As per the estimates made by K. K. D. A. in 1921 (through Lift Irrigation Department) a ground water potential for 3995 hectares both for Kandha and non-Kandha population is a necessity. Flow of Irrigation potential for Baliguda I. T. D. A. has been estimated at 7470 hectares of which 4650 hectares were from traditional small ponds and 2620 hectares from other sources. Only 2· 2% of the L. I. Potential has been utilized till 1981. Nevertheless, the Kutias in some places have made attempts to retain the rain-water in a few small paddy plots where they have enough valleys. The sample survey indicates that in the eight sample villages, out of a total low land of 118·70 acres, an area of 93·30 acres has been provided with irrigation facilities mostly by the farmers' own effort.

4·4·6. At present, 2 M. I. Projects have been taken up by the K. K. D. A. at Rajam and Belghar with a Khariff irrigation potential of 64·75 hectares and 45·20 hectares, respectively. Besides nine water harvesting structures have been planned and taken up by the K. K. D. A. with Khariff irrigation potential of 70 hectares. Thus, in the near future, it is etimated that 180 hectares in Khariff will have irrigation facilities in K. K. D. A. area.

Horticulture Development

4·4·7. The total requirement of vegetable per year for an adult population of 8000 is estimated at 841 M. T. which could easily be produced from an area of 112 hectares. During 1990-91 the area under vagetable and spices cultivation in K. K. D. A. was as follows:—

Name of the G. P.	Area in hectares					
	Sweet Potato	Potato	Other vegetable	Chilly	Turmeric	Zinger
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1 Belghar						
Khariff	14	..	55	6	5	5
Rabi	..	4	50	4	..	..
2 Gumma						
Khariff	10	..	50	8	3	4
Rabi	..	2	25	2	..	..
Total ..	24	6	180	20	8	9

4·4·8. As would be clear from above, vagetables are, at present being cultivated over an area of 210 hectares, but the yield per hectare being very low, the people in the area are not getting sufficient vegetables. Besides most of the Kutias don't know the use of vegetables for which these have not yet been formed a part of their regular diet. It is, therefore, necessary that while trying to increase the per hectare yield of vegetables, attempts should be made to get the Kutias used to vegetable curry. It is heartening to know that the sisters of Navjivan Mandal stationed in the Belghar Project Area are imparting training for the Kutia families the method of preparation of curry out of common vegetables, like brinjal and ladies'finger. They should be encouiaged to go ahead with the project.

4·4·9. For increasing yield per hectare demonstration on vegetable including spieces, like turmeric and chilly have been taken up under the Podu prevention scheme over 36·6 hectares during last 4 years and can be continued for 3 years in 10 per cent of the vegetable area that is about 25 hectares every year. In these areas inputs, like improved seeds, fertilizer and pesticides may be supplied free. The demonstration may be conducted in all the villages in Khariff and Rabi seasons; under close supervision of the grafters to be posted in the area. Since increased production of vegetables has the potential of marketing as a cash crop, it would be better to organize vegetable cultivation jointly through any existing organization in the village, preferably the co-operatives. The input supply can be arranged through the co-operatives and these may also be encouraged to store sufficient inputs for sales to the farmers according to their need. Ultimately, when vegetable production becomes more than the local requirement, the extra produce can be marketed through the co-operatives. As regards the use of inputs, like improved seed, fertilizer, plant protection chemicals, the consistent efforts of the K. K. D. A. have succeeded in creating awareness among the farmers. Out of a sample population of 108 farmers of the area, 87 farmers have deen reported to be using improved seed, 68 reported to be using fertilizer and 62 reported to be using P. P. chemicals. But all the users reported to have got their requirements from K. K. D. A. which evidently mean free supply of inputs for demonstration. It is now high time that the farmers should be slowly taken out of the demonstration stage. Inputs are to be stocked sufficiently within easy reach of farmers to enable them to purchase their requirements and for this purpose villlage co-operative is the only answer.

4·4·10. As regards fruit cultivation, the Kutias in general have a liking for the fruit trees which is evident from the fact that while burning the forest for Podu cultivation fruit trees are left unharmed and the bare hills are found to have only a fruit trees of mango, jackfruit, etc., in fruiting stage. In the villages a number of mango, jackfruit and tamarind trees are found and they have become rather old. The practice of planting fruit trees seems to be not in vogue for sometimes past. Thus, the Kutias for their fruit requirement depend on the trees in their homestead land and collection from the fruit trees left in the Podu land. The total annual requirement of fruits for the area by 2000 A.D. is estimated at 248' M. T. which could normally be produced from an orchard of 50 hectares. The area under fruit trees at present is not available. However, the area may be less than 50 hectares as sufficient fruits are not available to the population. It is, therefore, necessary to increase the area under orchards not only to make up the deficit in the fruit requirement but also to accelerate income generation of the farmers by sale of fruits as a cash crop. General cultivation may provide the Kutias with minor millets, pulses, cereals and oil-seeds on which they may subsist whereas the horticultural produce, like fruits and vegetables, after meeting their food requirement will provide ready cash with which they can meet their other requirements. The success of the fruit plantation scheme will depend on effective transformation of collective ownership which is the characteristic of the tribal land tenure system into private ownership and well-managed marketing organisation free from all kinds of exploitative elements. For the establishment of new orchards it will be necessary to allow every Podu family one hectare of land, that is about 1,200 hectares of new orchards will be established in the area.

4·4·11. During the recent past mixed orchards of mango, jackfruit, lichu, lemon, orange and guava have been established over an area of 47 hectares through the Horticulture Department under the Podu Prevention Scheme. Excepting jackfruit and lemons, all other varieties have been raised from grafts which naturally require better care in irrigation, manuring and protection. The area has been accordingly selected near water sources and mostly in private lands. Now the plants have come to fruiting stage though the fruits are not being retained at present. These orchards will require better attention in the form of management and protection for at least 2 years more after which these orchards will be completely taken over by the farmers concerned.

4·4·12. Since its inception, mixed fruit plantation have been taken up by the K. K. D. A. directly over an area of 117 hectares in different villages. Only a few of these plants have survived and are now in fruit-beartng stage. Cultivation of short-term fruits, like papaya and pineapple has also been taken up in farmers' field over an area of 12 hectares through the Horticulture Department under the Podu Prevention Scheme. These plantations seem to be coming up well. Plantation, which has been grown successfully in the area, may be added to the short-term fruit plantation programme where papaya and platain may be taken up first and pineapple may be added latter when some shade is provided by plantain and papaya. Demonstrations of short-term fruit bearing species over an area of 12 hectares per year may be continued for at least 3 years after the closure of Podu Prevention Schemes. For this purpose, land may be selected near water sources and in the homestead area where personal care can be taken. These demonstration will encourage farmers to put up additional area under shor-term fruit trees at their own cost.

4·4·13. So far the K. K. D. A. has spent over Rs. 5·39 lakhs from its own fund and Rs. 22·28 lakhs from the Podu Prevention Scheme and has attempted to establish mixed orchard over 176 hectares. It has conducted demonstrations in 36·6 hectares on vegetables. As indicated earliear, a portion of the orchards are now existing.

4·4·14. All these orchards will continue to meet the fruit requirement of the local population till the new orchards come to fruiting and then the produce will supplement the produce of new orchards which are likely to come to fruit bearing after 10 years.

4·4·15. The new orchard area would naturally come up in the revenue land and proposed reserve forest land near the villages which will be suitably marked and allotted to different villages for Podu cultivation. At present, this Podu land is jointly held and operated by the villages through the individual Podu farmers. Each farmer can take up cultivation in an area of about 2 hectares of which one hectare can be put under different fruit trees while the entire area can be put under their normal Podu cultivation.

4·4·16. To start with, every farmer can, in his entire area of 2 hectares of Podu land grow normal crops of ragi, suan (Kuiro), kangu, pulses and oil-seeds while only in the half of the area, i. e, about one hectare, seeds or seedlings of fruit trees, like mango, jack-fruit, guava, tamarind and cashew for which the farmers have a preference may be planted across the slope in rows 30 feet apart, the distance from plant to plant remaining the same for all except guava for which the distance may be kept at 20'. Planting of seeds is specifically stressed because the Kutia farmers are accustomed to such planting seeds will be locally available and such seedlings in situ have a better chance of survival. Where the seeds of desired variety are not available arrangements have to be made for supplying the same preferably in the form of seedlings. As usual, 2 to 3 seeds or seedlings may be planted per pit, during the beginning of rains in June or July. Digging of pits and planting of seeds or seedlings will be done by the farmers concerned for which they may be paid their wages. About Rs. 5 per pit may cover the cost of seeds or seedlings, digging of pits and planting. Out of this amount of Rs. 5 per pit, Rs. 4 per pit may be paid after planting and the balance Re. 1 per pit may be paid next year on the basis of survival of plants. Surplus amount may be utilized for gap filling according to necessity.

4·4·17. While preparing the land for sowing other crops (cereals, etc.), the pebbles and small stones found in the field may be collected and put in the rows of fruit trees across the slope which will ultimately form the rudimentary bunds and will prevent free flow of water and consequently chek erosion, to some extent. Sisal bulbils may be planted on these bunds to strengthen it.

4·4·18. In other half of the field, growing field crops alone will serve as a demonstration for erosion control. This simple practice may increase the period of cultivation in the bunded area by a year or two depending on the efficacy of the funds. As an encouragement for bunding, the farmers concerned may be given the wages of 8 to 10 labourers, i. e., about 250 per hectare in the first year. In the second and third years, the gaps may be filled by putting additional seeds or seedlings according to necessity. The plants will grow up to good size during a period of 3 to 4 years when the Jhoom area (Podu area) is on operation by the farmers. Consequently, there will not be any problem for watching the fruit trees. However, when the Jhoom area is left for recoupment, it is necessary to protect the growing trees against the stray cattle. This necessity is felt by the farmers themselves. Out of the sample of 108 farm families of the Kutia Kandha Project Area 85 feel that special arrangements for watching the fruit trees are necessary. It is encouraging that out of the same sample of 108 family, 107 families are prepared to watch the fields themeselves whereas only one family feels that Government should make some arrangment to watch his field.

4·4·19. As it is the common practice with the Kutias, the cattle are let loose after the Kharif harvest since almost 95 per cent of the Kutias do not take a second crop in rabi. It is, therefore, necessary to take decision at the village level to confine the grazing of cattle to Gochar and other land not under crop. The fruit plants can be treated as a crop just like any other crop and may be provided with protection at the village level.

4·4·20. If this practice is successful, the Kutias may have fruit orchards over 1,200 hectares of land with established fruit trees by the 6th or 7th year when the Jhoom area would be fit for operation again. The remaining part of Jhoom area of every farmer can then be put under fruit cultivation in a similar manner at his own cost. From the 10th year onwards, the earlier planted orchards will come to fruiting which at the minimum rate of yield per hectare is expected to produce about 6,000 M. T. of various fruits. This will mean about 5 tonnes of fruits per year per family and may bring, by sale, an annual income of Rs. 10,000 at the minimum.

4·4·21. Marketing of the fruits will be a problem and has to be solved in advance The tribal economy is still operated through barter. The important markets of the Kutias are Tumudibandh and Balliguda to which place they cannot come and therefore sell their produce to the Doms who as middlemen make much profit. Besides, some of the non-Kutia money-lenders operating in the area, advance money to the Kutias at the time of need and recover the loan in form of farm produce on the spot. As per the sample survey conducted in the area, the Kutias at present sell paddy, ragi, maize, kuiri (Suan), kangu, beans, kating, mustard and niger for cash though they themselves are short of these commodities. They sell almost all types of crops produced by them to meet the cash requirement for other needs. Additional production of fruits and vegetables will provide the Kutias with new means of obtaining cash by sale of such fruits and vegetables at Belghar, a small weekly market is slowly developing where mostly vegetables and fruits produced in the area are sold or exchanged. Farmers now carry their loads to the weekly market covering a long distance on the market days thereby loosing the wages for a day. This is not realised now as the salable quantity is small. But with a bigger programme of marketing over 6,000 M. T. of fruits and a few hundred tonnes of vegetables annually, a systematic marketing channel has to be developed to prevent the exploitation of Kutia

farmers. The village co-operatives as suggested earlier have to be organised quickly and entrusted with the responsibility of marketing fruits and vegetables produced in the area along with their other functions of input supply, credit-supply, etc. The produce from the nearby farmers can be purchased by the co-operatives concerned relieving the farmers of their burden at that level. Subsequent transport and marketing will be the responsibility of the co-operatives. One LAMPs is now operating in Belghar with a retail sale-*cum*-procurement sub-centre. It also advances loans to the cultivators. Also the T.D.C.S. at Balliguda has a branch at Belghar with a sub-centre at Bilanal. These institutions may be strengthened and more branches may be opened in the interior (at least one in each cluster suggested) to meet the growing need.

4·4·22. The process of planting of fruit trees will have necessarily to coincide with the first year of Jhooming or shifting cultivation in the selected Jhoom area. As the cultivation in a Jhoom area continues for 3 to 4 years, it is expected that 1/3rd of the villages will be having new Jhoom area every year. Thus the planting of trees in the entire area of about 1,200 hectares will have to be completed in 3 years. In subsequent years, gap filling and protection of the fruit trees will be necessary. The impact will be felt from the 10th year when fruiting will start with additional income to the family. Thus during course of 10 years the Kutias will be settled in farming. The increased yield obtained from the existing wet lands and uplands supplemented by vegetables and fruits from the high lands will be more than sufficient for their food requirement. Besides, the extra quantity of fruits produced in the Jhoom area will bring them enough money to meet their other requirements for a reasonably comfortable living and there will be no need for Jhooming or shifting cultivation. The proposed fruit orchards in hill slopes, at present, will continue for the time being in Government land till the grant of usufruct right to the farmers concerned. Almost 100% of the sample farmers in K.K.D.A. area have expressed their willingness for usufruct rights on such land. But this is not a full-proof system. Unless the farmers have full right over the land, they cannot be expected to take proper care of the plants and the land. Therefore, after the orchards are fully established, the land has to be finally allotted to the farmers concerned for whom this will be an added attraction. This may be made clear to the Kutias from the beginning to ensure their complete involvement in the orchard establishment.

4·4·23. Besides these, proposed orchards are to be established in the area. It is heartening to note that the Forest Department has taken up plantation of fruit trees in the higher slopes as a Podu prevention measure. These plantations when established, will not only add to the local production of fruits but will also discourage the Kutias from encroaching on these lands for Podu by cutting fruit trees.

4·4·24. *Administration*—Vegetable cultivation has to be organised in an area of 210 hectares and fruit cultivation in an area of 12 hectares in a period of 5 years. The area of operation will cover 80 villages under the Kutia Kandha Development Agency. The villages being scattered and unconnected by roads it will be necessary to have a contact man for every 10 to 12 villages with his headquarters in one of the villages from where he has to contact and advise all the farmers under his jurisdiction. A trained grafter with some experience in village work and prepared to work in the difficult terrain will be suitable for the post. For supervising the work of the grafter, it will be necessary to have one trained Horticulturist and a grafter as staff of the K. K. D. A.. They will provide constant guidance to the locally recruited grafters in the field, help them in the implementation of the programme and have field supervision as frequently as possible. Besides, they will look after the Horticultural Demonstration Centre at Belghar, where they will organise a short-term training programme (for a week) for the Kutia farmers in batches and acquaint them with various aspects of fruit and vegetable cultivation. From the third year onwards they, with the help of field grafters, will take up grafting on the

seedling mango plants (stocks) with quality mango variety (Scion) so that ultimately the entire mango area will be converted to orchards of quality fruits only.

Physical targets	1st year	2nd year	3rd year	4th year	5th year
1. Vegetable demonstration input supply.	25 H.	25 H.	25 H.	..	..
2. Short-term fruit demonstration	12 H.	12 H.	12 H.	..	..
3. Fruit orchard (Mixed)					
(*a*) Planting ..	400 H.	400 H.	400 H.	Gappling	Gappling
(*b*) Bunding ..	400 H.	400 H.	400 H.	..	..
(*c*) Watching ..	..	..	..	1200 H.	1200 H.
(*d*) Grafting (Mango)	..	..	80 H.	80 H.	80 H.
(*e*) Training the Kutia and maintaining demonstration centre.	300	300	300	300	..

FINANCIAL REQUIREMENTS

(In Rupees)

(1)	1st year (2)	2nd year (3)	3rd year (4)	4th year (5)	5th year (6)
1. Vegetable demonstration @Rs. 4,000 per H.	1,00,000·00	1,00,000·00	1,00,000·00	..	..
2. Short-term fruit demonstration @Rs. 15,000 H.	1,80,000·00	1,80,000·00	1,80,000·00	..	..
3. Mixed Orchards					
(*a*) Plantation — @Rs. 750 per H.	3,00,000·00	3,00,000·00	3,00,000·00	..	..
(*b*) Bunding@Rs.250 perH.	1,00,000·00	1,00,000·00	1,00,000·00	..	..
(*c*) Watching ..	..	..	..	50,000·00	50,000·00
(*d*) Grafting ..	..	..	10,000·00	10,000·00	10,000·00
(*e*) Training and maintenance of D. C.	1,00,000·00	1,00,000·00	1,00,000·00	1,00,000·00	40,000·00
4. Staff —					
(*a*) Junior Horticulturist(1) @Rs. 3,000 P. M.	36,000·00	36,000·00	36,000·00	36,000·00	36,000·00
(*b*) Grafter (8) @ Rs. 2,000 P. M.	1,92,000·00	1,92,000·00	1,92,000·00	1,92,000·00	1,92,000·00
(*c*) Deputation Allowance@Rs. 20 ..	45,600·00	45,600·00	45,600·00	45,600·00	45,600·00
	10,53,600·00	10,53,600·00	10,63,600·00	4,33,600·00	3,73,600·00
5. Buildings—					
(*a*) Quarter for J. H. (1)	1,00,000·00	..	..	..	..
(*b*) Quarter for Grafter(8)	4,00,000·00	..	..	..	..
(*c*) Training Shed (one)	20,000·00	..	..	..	..
Grand Total ..	15,73,600·00	10,53,600·00	10,63,600·00	4,33,600·00	3,73,600·00 44,98,000·00

INFORMATION ON CONTROL OF SHIFTING CULTIVATION (BELGHAR PROJECT)

1. Name of the State : ORISSA

Project area and villages :

Name of the district (1)	Name of the Project area (2)	Name of the village (3)	No. of Podu families (5)
Phulbani	Belghar ..	1. Rangaparu ..	93
		2. Belghar ..	43
		3. Jhalipada ..	26
		4. Kusumunda ..	14
		5. Burlubaru ..	39
		6. Kranjikana ..	19
		7. Tuakala ..	17
		8. Kadapana ..	22
		9. Ushabali ..	24
		10. Pekusi ..	21
		11. Tidipadar ..	9
		12. Saperi ..	24
		13. Ganbhari ..	17
		14. Kadam ..	6
		15. Guchuka ..	17
		16. Paikapada ..	16
		17. Susabhata ..	27
		18. Pagerpadi ..	19
		19. Salapata ..	11
		20. Mahabali ..	35
		21. Radang ..	23
		22. Dupi ..	43
		23. Guma ..	49
		24. Pukuru ..	54
		25. Kranja ..	17
		26. Nuamunda ..	24
		27. Pedam ..	12
		28. Kelanguda ..	11

Name of the District (1)	Name of the Project area (2)	Name of the village (3)	No. of Podu families (4)
Phulbani	Belghar ..	29. Sana Guchuka ..	3
		30. Bhaluguda ..	11
		31. Lidrang ..	17
		32. Bhandarsal ..	6
		33. Kanibaru ..	48
		34. Golambanga ..	11
		35. Sipidikhole ..	8
		36. Kinari ..	23
		37. Dhumamaska ..	23
		38. Khadapanda ..	15
		39. Rajam ..	16
		40. Bilamala ..	33
		41. Dhudisi ..	11
		42. Saperibhata ..	10
		43. Galebada (Muskasary) ..	9
		44. Mundimaska ..	18
		45. Dharanimaska ..	12
		46. Goibali ..	14
		47. Bikapanga ..	14
		48. Sankasana (Mandamaska) ..	17
		49. Dhamanpanga (Garong) ..	27
		50. Ambidikhole ..	4
		51. Gumpadar ..	4
		52. Karlangi ..	12
		53. Padkadi ..	7
		54. Silkudi ..	..
		55. Badakumudi ..	12
		56. Germeli ..	50
		57. Samkumudi ..	6
		Total ..	1,200

4·5. IRRIGATION

4·5·1. Irrigation, being one of the important inputs of agriculture, becomes a vital element of the rural infrastructure for development. Hence in any planning for development sufficient weightage has to be given for irrigation development. It is much so in the case of any part of the State of Orissa where agriculture sector is the mainstay of the State economy and provides employment for a major part of population and yet by and large it depends on the vagaries of monsoon.

4·5·2. The level crop production is largely dependant on adequacy and timely availability of water. The importance of water needs no emphasis in areas of scanty and erratic rainfall, where conservation of the run-off and its judicious application to supplement the water requirement, so as to protect the standing crops become imperative. Besides performing the protective role, irrigation directly helps in bringing about technological change, promising accelerated agricultural production.

4·5·3. Irrigation programmes in the area include a large variety of schemes which differ widely in their technical features and scope—

(*i*) Minor Irrigation,

(*ii*) Lift Irrigation.

4·5·4. Minor Irrigation (flow) works mainly comprise of (*i*) construction of reservoir or diversion weirs, (*ii*) improvement and maintenance of existing M. I. Projects and (*iii*) renovation or modernisation of derilect or partly derilect projects.

4·5·5. Lift irrigation works mainly comprise of construction of lift points to lift water for providing irrigation facilities for which electrification in the area is absolutely necessary.

4·5·6. From the records available it is seen that from inception of the Agency, i. e., from 1978 till 1991 about Rs. 68 lakhs have been allotted out of which Rs. 57 lakhs have been spent on establishment/charges (Rs. 27 lakhs) and various sub-heads of development work (Rs. 30 lakhs). Out of the said amount an amount of Rs. 1·98 lakhs have been spent for two M. I. Projects by M. I. Division, Phulbani for improvement of (*i*) Belghar M. I. P. having an ayacut of 45·20 hectares and (*ii*) Rajam M. I. P. with 64·75 hectares. During inspection, these two M. I. Ps. are found giving sufficient benefit to the tribal population of the area.

4·5·7. The list of six water harvesting structures as per the information furnished by ITDA, Balliguda is enclosed for reference. An amount of Rs. 7,56,000 has been spent for 6 schemes which are said to have given irrigation to about 60 hectares of ayacut.

4·5·8. As seen from records no L. I. Point is available in the agency area due to lack of electricity.

4·5·9. *Programme of work*—It is found that M. I. Ps. are feasible but these may not be economical since sufficient land is not available. If some forest lands are reclaimed and provided to tribal people, benefits from water resources available in the area can be derived by construction of either M. I. Ps. or small water harvesting structures or L. I. Points after electrification of area depending upon their feasibility.

4·5·10. The ITDA, Balliguda has furnished a programme for construction of 35 numbers of water harvesting structures at a cost of Rs. 36 lakhs (as per the list enclosed) for providing irrigation to 134 hectares. These proposals may be thoroughly investigated by our technical agency before execution.

Existing

PROGRAMME 1

For K. K. D. A. Area only

Work executed under Irrigation Programme Schemewise and Villagewise (From I. T. D. A., Balliguda)

Sl. No.	Name of the work with location	Estimated cost	Expenditure incurred	Ayacut prepared	Ayacut achieved	Agency through which executed	Remarks
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		Rs.	Rs.				
1	Water Harvesting Structure ..	1,50,000	1,55,000	13·000	13·200	Soil Conservation Department.	9 S.T. & 3 S.C. beneficaries.
2	Water Harvesting Structure at Pedam.	1,00,000	1,00,000	12·000	12·101	Ditto	12 S. T. beneficiaries.
3	Water Harvesting Structure at Pukur Kalanguda.	1,00,000	1,00,000	4·271	4·271	Ditto	10 S. T. beneficiaries.
4	Water Harvesting Structure (Prengal).	68,000	68,000	3·740	3·704	Ditto	12 S. T. beneficiaries.
5	Water Harvesting Structure at Pagarpadi.	77,000	77,000	11·499	11·499	Ditto	15 S.T. & 3 S.C. beneficiaries.
6	(*i*) Water Harvesting Structure at Pakur.	1,29,000	1,29,000	4·329	4·329	Ditto	19 S.T. & 2 S.C. beneficiaries.
	(*ii*) Water Harvesting Structure at Pakur.	1,27,000	1,27,000	10·787	10·787	Ditto	
			7,56,000		59·891		
7	Minor Irrigation Project at Rajam.	1,29,700	1,29,700	64·75	64·75	Executive Engineer, M. I. Division, Phulbani.	
8	Belghar Minor Irrigation Project	68,800	68,800	45·20	45·20		
		1,98,500	1,98,500		109·95		

PROGRAMME II

Proposed Irrigation Projects by I. T. D. A., Balliguda in Kutia Kandha Development Agency area

Name of the MIP with location	Type of work proposed	Estimated cost in lakhs of rupees	Ayacut to be covered in hectares
(1)	(2)	(3)	(4)
1. Gumma ..	Excavation of tank and diesel pump.	1·15	2·500
2. Rangaparu ..	Ditto	1·15	2·250
3. Susabhatta ..	Ditto	1·15	2·500
4. Kadapana ..	Ditto	1·15	2·000
5. Kranja ..	Ditto	1·15	2·500
6. Pukur ..	Ditto	1·15	2·500
7. Saperi ..	Excavation of 2 tanks & provisions of 2 diesel pumps.	2·30	5·500
8. Khadapanga ..	1 Tank with pump	1·15	2·000
9. Mohakalli ..	Ditto	1·15	2·000
10. Pikapada ..	Ditto	1·15	2·000
11. Kranjikana ..	Ditto	1·15	2·000
12. Pikusi ..	Ditto	1·15	2·000
13. Kusumunda ..	Ditto	1·15	2·000
14. Dhumamaska ..	Ditto	1·15	2·000
15. Rajam ..	1. 1 tank with pump	1·150	2·000
	2. MIP. with pump	1·150	2·500
	3. Direct lift pump	0·11887	2·086
16. Mundimaska ..	1 Tank with 1 pump	1·15	2·000
17. Golampanga ..	Ditto	1·15	2·000
18. Dhamanpanga ..	Ditto	1·15	2·000
19. Billamalla ..	Ditto Check Dam	1·15/1·00	2·000/2·500
20. Karanguda ..	Water Harvesting Structure	2·50	6·000
		23·70	54·330

PROGRAMME II—(*Concld.*)

Name of the MIP with location	Type of work proposed	Estimated cost in lakhs of Rs.	Ayacut to be covered in Hectares
(1)	(2)	(3)	(4)
21. Kanibaru ...	Water Harvesting Structure ..	2·50	5·000
22. Saperibhatta ..	Water Harvesting Structure ...	2·50	6·25
23. Dharanimaska ...	Water Harvesting Structure ...	2·50	5·000
24. Karlangi ...	Farm Pond ..	1·00	2·000
25. Belghar ..	Direct L. I. Point —	0·11887	2·355
26. Burlubaru ..	Direct L. I. Point ..	0·11887	1·687
27. Tidipadar ..	1. Tank with pump ..	1·15	2·000
	2. Water Harvesting Structure ...	2·5	4·750
28. Gohiballi ..	1. Tank with pump —	1·15	2·000
	2. Farm Pond ..	1·00	2·000
29. Radang ...	1. Tank with pump ..	1·15	2·500
	2. Farm Pond—1 ..	1·00	2·000
30. Dupi ..	1. Tank with pump—1 ...	1·15	2·000
	2. Direct L. I. Point ...	0·11887	2·694
	3. Water Harvesting Structure ...	2·50	4·000
31. Ushaballi ..	1. Tank with pump ...	1·15	2·000
	2. Direct L. I. Point—1 ...	0·11887	1·624
	3. Farm Pond—1 ..	1·00	1·500
32. Germelli ..	1. Tank with pump ...	1·15	1·500
	2. Farm Pond—1 ..	1·00	1·500
	3. Water Harvesting Structure ...	2·50	3·500
33. Saksana ...	1. Tank with pump ...	1·15	1·500
	2. Farm Pond—1 ..	1·00	2·000
	3. Water Harvesting Structure ...	2·25	3·500
34. Sanakumudi ..	1. Direct Lift point ..	0·11887	3·793
35. Gambhari ..	M. I. P. with 1 Diesel pump ...	1·15	2·500

N. B.—Exact locating 8 more Direct Lift Points will be made avaliable after completing of survery report.

4·6. ANIMAL HUSBANDRY

4·6·1. In agro-based Indian societies livestock is considered as wealth. Cattle and buffalo are directly associated with the farming process whereas rearing of other animals provides subsistence to many poor marginal farmers and landless families. Animals are a means of livelihood for many people in our society. In a tribal society where settled agriculture is a matter of recent practice, the livestock has to play an important role in their pattern of living.

4·6·2. In our country where there is acute shortage of animal proteins in human dietary in take the development of animal rearing practices have great possibilities and tremendous potentialities. It is said that on cereals alone a nation of weeklings only can be built and to build a strong nation, the diet must include animal proteins, like egg, meat, fish, milk and its products.

4·6·3. While considering the animal husbandry practices of the Kutia Kandhas the opinions of T. S. Sohal, Head, Division of Dairy Extension, N. D. R. I., Karnal seem to be relevant. To quote him, "Dairying holds a great potential for improving socio-economic conditions of the weaker segment of the rural population. They are already conversant with the work of keeping animals. With a further support in providing remunerative marketing and technical inputs and services at their door steps, the rural poor can be greatly helped". These words hold the key to the development of a design and plan for animal husbandry in the Kutia Kandha Project Area.

4·6·4. Poultry and rearing of pigs are called poor man's cottage industries. For the poor families of the Kutia Kandhas of whom 48·56 per cent are landless, animal husbandry is their chief alternative for subsistence or they have to be daily wage-earners. Possibly, both animal husbandry and daily wage earning can be combined initially till animal husbandry becomes a full-time profession yielding enough not only for subsistence but also to spare. The best alternative economic pursuit that can be recommended for the Kutia Kandhas is animal husbandry.

Every family has a dog and it is accommodated inside the living house of the Kutia Kandhas at night. At the backyard another enclosure is made to keep the cattle, buffalo, pigs and goats reared by the household. A difference may be marked that many tribal communities keep their animals in common enclosures of the village but the Kutia Kandhas have separate enclosures for the domestic animals of each family.

4·6·5. The arrangements made by the Kutia Kandhas for keeping the animals are far less than the minimum requirements. The animals are kept in unhealthy condition and are almost exposed to the ravages of nature and wild animals. There are instances of wild animals eating away the domestic animals from the enclosures adjacent to the living rooms. The animals are left for grazing in the forests and are never given any food in the households, somehow the green fodder sustains the animals in normal health.

4·6·6. *Livestock Population*—It is observed that both Belghar and Gumma Grama Panchayats are situated on more or less table land with small patches of hills intervening the continuity. Almost every village is surrounded by green forests suitable for rearing of animals round the year. Except the danger of wild animals other conditions are favourable for maintenance of livestock population. Acute scarcity of drinking water for the human population as well as for the livestock population was seen in some villages. They have to cover a long distance to fetch water even for their cooking. Hence the question of providing water for the livestock population at the household site does not arise. Want of drinking water ultimately affects the health of the livestock population.

4·6·7. Most of the Kutia Kandha families being landless or marginal farmers have to depend upon the forest products. Every family is engaged in shifting cultivation (Podu). Their staple food is ragi and rice gruel. The poor is more dependent upon the juice of salap which is food in the early morning but a strong drink in the noon and evening. They are very fond of buffalo meat, beef, pork and dry fish. The main crops grown by them are niger, ragi, mustard, maize, paddy and kandul the residue of each of which can be used as feed and fodder for the animals and birds reared by them.

4·6·8. The livestock population of Gumma Grama Panchayat is numerically less than that of Belghar Grama Panchayat. The reasons for such difference are that ten villages of Gumma Grama Panchayat are comparatively smaller in size and all the families are mostly engaged in Podu cultivation in which the help of cattle and buffalo is not much required. The benefits of livestock rearing and products thereof for economic rehabilitation have not been realised by the people. Moreover, whenever any beneficiary-oriented scheme was introduced, the advantage was taken by the people of Belghar Grama Panchayat through frequent personal contact. Another factor which also contributes to the differential growth of livestock population is that the people of Belghar Grama Panchayat being very near to the extension centres have more frequent exposure to the schemes introduced from time to time. Naturally their awareness about the programme was better and they have taken advantage of their situation.

TABLE 4·6

Livestock Census year, 1990-91

Ghuma G. P.

Sl. No.	Name of the village	Cattle	Buffalo	Sheep	Goat	Horse	Pig	Dog	Poultry	Human population
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1	Gumma	270	89	45	173	..	126	38	370	111
2	Pikusi	42	..	..	27	..	..	..	96	71
3	Khadapanga	38	..	..	22	..	12	—	32	..
4	Dupi	66	..	..	58	..	113	..	154	144
5	Nuamunda	26	..	16	30	..	4	..	77	91
6	Saperi	28	..	..	35	..	18	2	75	69
7	Karanja	45	..	..	33	..	7	2	117	67
8	Pagarpadi	37	14	..	20	..	..	..	98	74
9	Guchhuka	21	..	..	24	..	11	5	64	66
10	Randanga	52	17	6	29	..	23	6	110	88
11	Kanibaru	9	..	..	19	..	17	11	60	109
12	Mathaghati	14	..	..	17	..	10	..	27	11
13	Kalanguda	21	..	..	..	..	33	..	66	68
14	Pedam	..	..	..	29	..	..	..	88	89

Sl. No. (1)	Name of the village (2)	Cattle (3)	Buffalo (4)	Sheep (5)	Goat (6)	Horse (7)	Pig (8)	Dog (9)	Poultry (10)	Human population (11)
15	Bhaluguda	40	4	..	24	..	24	7	110	60
16	Sipidikhol	26	9	..	19	..	37	..	51	23
17	Lindranga	15	19	..	29	..	59	..	60	75
18	Bariguda	22	12	..	17	..	12	4	85	24
19	Sulapata	12	..	..	20	..	28	..	40	29
20	Mahabali	30	..	..	20	..	..	..	46	124
21	Kineri	16	..	..	16	..	29	..	79	61
22	Gambhari	23	..	..	17	..	34	..	79	38
23	Golampanga	33	..	8	12	..	15	3	54	67
24	Sushabhatta	24	..	..	18	..	11	..	90	61
25	Ushabali	17	6	..	24	..	..	4	74	89
26	Sukerapadar	13	12	..	20	..	..	..	44	28
27	Bhandarsal	17	..	..	20	..	26	..	37	17
28	Pringel	41	..	43	19	..	21	3	104	27
29	Jamuguda	25	..	..	19	..	30	..	47	7
	..	1023	182	118	810	..	700	85	2434	..

LIVESTOCK CENSUS YEAR, 1990-91

Belghar G. P.

Sl. No.	Name of the village	Cattle	Buffalo	Sheep	Goat	Horse	Pig	Dog	Poultry	Human population
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1	Belghar ..	254	18	..	69	2	75	19	451	1,346
2	Jhalipada ..	201	51	..	146	..	148	22	629	180
3	Khadpanga ..	95	24	..	78	..	..	10	225	313
4	Golabeda+Maskasaru ..	30	..	..	25	..	24	10	361	36
5	Dahabali ..	23	5	..	14	..	110	8	36	30
6	Dhumamaska ..	43	5	..	22	..	15	7	64	90
7	Bulujora and Ambidi-khole.	18	6	..	18	..	15	5	45	13
8	Telengapadar Deogarh ..	20	4	..	12	..	14	3	37	126
9	Karanjikana ..	45	..	..	35	..	25	6	85	84
10	Rajam ..	61	20	..	45	..	29	15	102	62
11	Kadapana ..	50	..	..	26	..	31	11	122	71
12	Saperibhata ..	52	31	..	45	..	44	6	89	41
13	Sadangi ..	126	63	..	66	..	74	20	203	57
14	Bikapanga ..	62	33	..	38	..	35	13	96	26
15	Mundimaska ..	84	73	..	56	..	65	9	163	58
16	Dharanimaska ..	75	18	..	75	..	66	18	155	50
17	Garanga ..	69	31	..	52	..	47	18	161	115
18	Paikapada ..	16	2	..	11	..	9	3	34	53
19	Dhumamaska ..	62	27	..	34	..	25	..	113	90
20	Sankumudi ..	37	17	..	30	..	22	10	56	26

Sl. No.	Name of the village	Cattle	Buffalo	Sheep	Goat	Horse	Pig	Goat	Poultry	Human population
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
21	Guhibali ..	43	30	..	19	..	14	11	88	57
22	Badakumudi ..	182	100	..	116	..	119	29	333	52
23	Burlubaru ..	109	34	..	84	..	71	15	194	100
24	Dhudsi ..	294	4	4	204	..	109	44	565	316
25	Batipada ..	86	65	..	56	..	51	20	167	114
26	Sana Tuakala ..	13	8	..	6	..	7	..	30	14
27	Madalakana ..	41	20	..	24	..	22	..	106	24
28	Tarangabali ..	60	22	..	36	..	43	..	90	45
29	Gunusupa ..	43	23	..	44	..	62	..	98	70
30	Gurlimaska ..	90	64	..	56	..	47	5	142	73
31	Kusumunda ..	40	..	..	26	..	16	2	62	55
32	Karalangi ..	54	38	..	35	..	34	4	97	28
33	Geramali ..	57	27	..	28	..	21	..	96	187
34	Tuakala ..	37	16	..	22	..	23	4	45	78
35	Rangaparu ..	227	93	..	159	..	512	16	449	321
36	Bilamala ..	364	129	..	229	..	200	30	567	818
	Total ..	3,163	1,101	4	2,041	2	1,864	392	6,356	

4·6·9. There are 505 landless families, 134 families having land up to one acre, 196 families having one acre to two acres of land. These 835 families constituting 81·47 per cent of the total households should be given assistance under animal husbandry programme in order to enable them to improve their economic condition. The remaining 190 families who have got land from 2 to 10 acres or more would take up animal husbandry only as subsidiary undertakings, agricultural economy being their main stay.

4·6·10. It is encouraging to note that the Kutia Kandhas have developed the practice of milking cows and buffaloes and started selling milk at Belghar where there is a demand by the official staff whereas their counterparts at the Bonda hills have not started milking their cows. The people of the villages, like Kusumunda, Burlubaru and other villages located within 3 Kms. from the project headquarters have started selling milk in exchange of money. Other villages could have started this practice had there been road communication and means of quick transportation. This observation has generated enough of hopes of introducing better animal husbandry projects as a measure of poverty amelioration under different schemes operated by Government in connection with eradication of poverty of this section of the rural poor.

4·6·11. The Tumudibandh-Belghar road is now being black-topped and a public bus has started plying daily. There are now better opportunities for marketing milk products, eggs, meat, animals like broiler poultry, goat and pigs, etc., in order to improve the economic condition of the tribal poor. If the possibilities of organising dairy or poultry co-operative societies could be explored, the programmes would help the landless people and marginal farmers constituting nearly 80 per cent of the population. The poor landless families who have the only one way of earning livelihood, i. e. by earning a daily wage could be assisted substantialy if facilities are given to them for animal husbandry through co-operative societies. Wage-earning not being an assured source of regular income, they would be inclined towards animal husbandry which could provide employment with remunerative economic returns round the year.

4·6·12. *Quality of livestock*—The information furnished by the Special Officer, K. K. D. A., Belghar reveals that the project has supplied 70 units of goats to 70 families at a cost of Rs. 88,653·45 paise and 10 units of white boar (pig units) at a cost of Rs. 3,426·55 paise to 10 families. It is also informed that one breeding cow-bull was given on host basis with finance for maintenance of the bull. It was estimated that the bull would serve 990 families. The cost of bull and its maintenanca was Rs. 9,692·00. Some improved progenies of the bull are still found in the cattle herds around Belghar. The bull became very much controversial among two groups of the public, so much so that one group demanded withdrawal of the bull. The bull died in due course. No detailed records could be viewed in the veterinary dispensary regarding activities of the Kutia Kandhas in respect of animal husbandry as no staff except a Class IV employee was available at the Dispensary during the survey work.

4·6·13. A broad view of the quality of the livestock is that barring a few improved programmes of the cow-bull, the rest of the cattle and buffalo population are indigenous. Improved progenies of the boar units and goat units supplied could not be seen any where during visit to villages, nor any report thereof could be obtained. The goat population and pig population are all indigenous.

There was a proposal for supply of 30 duck units during the seventh five-year plan period as shown in the project profile furnished by the P. A., I.T.D.A., Baliguda. But no assets have been delivered as per plan proposal. Similarly, proposals for suply of 20 dairy units and 20 piggery units have not been materialised. No. explanation has been furnished in the remarks column of the statement as to why the proposals did not materialise.

4·6·14. *Livestock diseases and treatment*—As per the information furnished by the Sub-divisional Veterinary Officer, Baliguda the common prevalent diseases of livestock treated at veterinary dispensary, Belghar are—

(*i*) Debility
(*ii*) Anoerexia
(*iii*) Septic wound
(*iv*) Conjunctivities and
(*v*) Sprain

4·6·15. As it appears all these disease relete to large animals. No species-wise treatment record could be seen at Belghar Veterinary Dispensary as no staff member expect a Class-IV employee was at site. The report also mentions that there has been no incidence of any epidemic diseases for the last five years in Belghar project area which is under the jurisdiction of the Veterinary Dispensary.

4·6·16. Discussion with the livestock owners during spot visit revealed that there have been sporadic occurance of epidemic diseases like Haemorrhagia-septicaemia amongst cattle, Black-quarter disease amongst calves and Ranikhet disease among poultry population. There is no record in favour of any preventive vaccination done to the livestock in the area. The incidence of epidemic diseases have been of sporadic nature because of the natural hilly environment with high attitudes where spread of epidemic diseases is not so acute due to the climatic effects. Besides the scattered distribution of the livestock population does not allow the epidemic diseases to disseminate quickly and easily as in the plains. Whenever any animal dies of any disease or on point of death, it is consumed by the human population. Thus, this prevents spread of epidemic diseases as the carcass is not thrown outside and subjected to disposal by natural scavangers, like vultures, crows, jackals, etc.

4·6·17. The reporting system on the incidences of epidemic diseases is very poor. That is why even if there have been incidences of epidemic diseases no report has been found on record. For example, the report of the Sub-division Veterinary Officer that there has been no incidence of epidemic diseases during the last 5 years in Belghar project area is not trustworthy. It is further observed that necessary awareness has not been created among the livestock owners that a diseased animal should be subjected to modern treatment for which facilities are provided in the Veterinary Dispensaries. This ignorance of the people has resulted in no-treatment and no-report. As it appears the staff posted at the Veterinary Dispensary and Live-stock Aid Centres are not mobile and vigilant to collect information or to offer door-step treatment while on tour.

4·6·18. *Fodder and Feed for Livestock*—The livestock population is generally left to grazing in the green forest which are abundantly available. The crop residues of agricultural produces substantially contribute to the feeding requirements of the live-stock population. The Kutia Kandhas are traditionally agro-based people who are goodenough to utilise the table land available to them. They mainly produce paddy, maize, soyabean, sunflower, mustard, ground-nut, ragi, mung, biri and kandul, the residues of which are used as cattle and buffalo feed. Although they are not used to provide concentrated balanced ration to the livestock population for maintenance and production, the deficiency is not acutely felt as the animals compensate by taking naturally available greens and the crop residues, yet there are occasionally reports relating debility of animals due to deficiency of minerals and trace elements. The adverse effects of mineral deficiency are reflected in the reproductive disorders of the animals like delayed heat, impaired heat, and long inter-calving period. The deficiency obviously also affects the production.

4·6·19. It has been observed during the spot visit to different villages that good number of recently born calves in average health are available which proves that the breeding cycle of cattle and buffaloes is continuous. But all the breeds are of

indigenous variety born out of non-descript bulls. The awareness and the traditional favourable attitude of the Kutia Kandhs for the livestock may be taken advantage of for introducing higher genetic germ-plasm through improved bulls, genetically potential high yielding progenies will ensure higher incomes to livestock owners with economically viable units.

Infrastructural inputs—The Kutia Kandha Development Agency, Belghar has a Veterinary Dispensary at the project headquarters which was found to be almost defunct during the period of visit of the Project Consultants. It was reported by the local people that the Dispensary is almost inoperative due to continuous absence of the technical staff. Of course, there are problems of residential accommodation at Belghar but all the same some provision could be made if any V. A. S. or Livestoc Inspector evidenced any interest in his work.

There is no Livestock Aid Centre at Panchayat Headquarters, Gumma where a Livestock Inspector has been posted. The impact generated by establishment of the Livestock Aid Centre and the activities of the functionaries did not appear to be impressive. The supervising and monitoring authorities of the Veterinary Dispensary at Belghar are not vigilant over the activities of the centre. The major defects lie with the Veterinary Assistant Surgeon, Belghar and the subdivision level Veterinary Officer in respect of their supervision and inspection. Had they been keen on the activities of the veterinary institutions situation would have been improved.

The Kutia Kandha Development Agency does not seem to have given adequate attention to the development of animal husbandry activities as they have done for the human health counterpart. Except providing an one-roomed Dispensary and some medicines they have not looked at the functional aspect of the Dispensary and its feeding Sub-centres. Attention over all the programmes of the K. K. D. A. would have resulted in better livestock rearing practices in the project area.

A number of camps were organised by the Health Wing of the K. K. D. A. Project, like leprosy camp, eyes camps, general health camps, etc,. for which funds were provided by the K. K. D. A. and line Departments from time to time but no single camp has been organised in Animal Husbandry sector since the inception of the project. At least a few general treatment camps for the livestock could have been arranged both for treatment of the sick animals and propagation in favour of animal husbandry. This aspect is vitally important in the scattered villages situated in the deep terrain of K. K. D. A. Doorstep Service at frequent intervals would have been the only racourse to motivate people and generate favourable attitudes among the primitive tribe.

An overview of the Annual Plan for 1991-92—An overview of the programme under the Annual Plan for 1991-92 furnished by the Project Administrator, ITDA, Baliguda for the Belghar project indicates that a sum of Rs. 1·450 lakhs has been provided for development of animal husbandry which is not at all encouraging. The weightage given to animal husbandry sector indicates lack of balance of the plan. As has been discussed earlier the Kutia Kandha Project area with its high potential of human and natural resources for developing the livestock as a profitable profession has immense possibilities for removing the poverty of the bulk of the population. Moreover, the large number of landless and marginal farmers of the area is another plus point for development of the livestock as an economic pursuit.

Utter negligence has been shown in the past to this sector by providin g only 70 goat units to 70 families and 10 pig units to 10 families. The total number of families benefited by the animal husbandry schemes is 80 out of 1011 constituting 7·91 per cent. The expenditure incurred for development of animal husbandry is Rs. 1,01,772·00 out of the total expenditure of Rs. 56,97,053·21 P. which constitutes 1·78 per cent. Negligence of the Animal Husbandry Sector is conspicuous. The

backward and forward linkages and monitoring aspects have been completely neglected. Virtually nothing has been done for improving the breed and productivity of the livestock One bull was provided on host basis to render services to the cattle of 990 families located in scattered villages away from each other. At least the breed of the livestock could be improved by introducing higer genetic germ-plasm of exotic origins.

The proposals under animal husbandry scheme for 1991-92 are limited to supply 600 pairs of plough bullocks at cost of Rs. 1·20 lakhs and supply of medicines worth Rs. 25,000. Supply of plough bullocks should have been a programme under agriculture sector but not in animal husbandry. Hence practically except supply of medicines there is no programme for animal husbandry in the Annual Plan, 1991-92.

Action Plan for Animal Husbandry —A developmental strategy that aims at improving the lot of the poor must try to create new productive assets for them, Formulation of economically viable schemes to involve the prospective beneficiaries in productive activities that can yield economic returns would be the kingpin of the programme. But it is important to identify the right beneficiaries, determine their potentialities. While preparing scheme the household should be taken as a unit, not the individual. Schemes should attempt at creating full employment opportunities for the family members.

For formulation of developmental schemes agriculture is considered as the primary sector and as such is given more importance. It is supposed that development of agriculture would improve the lot of the bulk of the poor. In this context, when we consider the Kutia Kandha Development Project area, Belghar we find that development of the agriculture sector would help hardly 5 per cent of the population who possess 5 to 10 acres of land, 48·56 per cent of the population are landless, 13·25 per cent have land up to one acre and 19·38 per cent have one to two acres. Any scheme concentrating on agriculture sector would be of no benefit for these families. The only alternative for them is the animal husbandry sector which would immediately raise their income if a forward linkage is established through organised efforts.

It has been observed that the landless families and marginal farmers have proved to be livestock rearers than the viable farmers. There are some logical reasons for animal husbandry to be pre-eminently suitable for the non-viable farmers than viable land owners—

(*i*) A landless or marginal farmer family has surplus manpower to be engaged in maintenance of the livestock whereas a farmer would not have enough family members to be spared for taking intensive care of the animals.

(*ii*) The landless or marginal farmers are likely to be more sincere towards animal husbandry and they would whole-heartedly engage themselves for taking care of animals as they have no other remunerative engagement. But to a farmer animal husbandry is a subsidiary business.

(*iii*) Pressing needs for additional income to meet the consumption requirements of the family prompt the landless and marginal farmers to give more attention to the animal husbandry.

(*iv*) Maintenance of livestock being labour-intensive it suits to the poor families. The under employed family member (wife and children) get full engagement in animal husbandry.

(*v*) Animal husbandry practices like the dairy farming, poultry provide nutritive articles of food like milk, milk products, eggs etc., without much cost. The usual mal-nutrition of the poor families is removed thereby.

(*vi*) A farmer having 5 to 10 acres of land would consider animal husbandry practices to be a disturbance and deregatory to agriculture but a landless or marginal farmer would take it as a primary economic pursuit to enhance the family income.

In consideration of the above logical reasons the Kutia Kandha tribe with 80·20 per cent landless and marginal farmers are eminently suitable for animal husbandry practices, provided animals and birds of improved breed are supplied and marketing facilities are made available through co-operative organisations. A long-term plan for providing backward and forward linkages to the livestock owners would go a long way in inducing the Kutia Kandhas to adopt animal husbandry practices.

The Kutia Kandhas are traditionally inclined towards animal husbandry. They are good at animal rearing. There are social and religious customs of sacrificing buffalo or cow in religious festivals but the incidences are rare. In consideration of the socio-religious customs and animal rearing habits of the Kutia Kandhas ,it is worth-while to extend beneficiary oriented schemes under Animal Husbandry sector to the landless and marginal farmers of this tribe.

The cluster approach—Clusters are sub-centres of execution of schemes introduced in various sectors. The Belghar project area has been divided into six clusters of villages in consideration of their location, road communication and easy approach to the villages. The cluster headquarters are central villages where the functionaries are to be placed. This approach is considered appropriate in view of the hilly and terrain conditions of the area and the scattered nature of the location of villages. This will facilitate intenses operation and close supervision and monitoring of the progress of the proposed developmental programmes.

Barracks with independent units of living are to be constructed at the cluster headquarters where the functionaries of different departments are to be accommodated. Each unit shall have one spacious living room'a kitchen space on the rear verandah and a latrine with a squatting plate. If a functionary desires he may live there with his family. The barracks will be more economic than providing family quarters and more socially secured. The six clusters and the villages of the clusters are as follows:—

Cluster-I, Headquarters: Belghar

1. Belghar
2. Kusumunda
3. Rangaparu
4. Sana Kumudi
5. Germali
6. Tuakola
7. Sana Tuakola
8. Sambeda padar
9. Madakana
10. Deoguda
11. Burlubaru
12. Kalapana
13. Jhalipada

Cluster-II. Headquarters: Bilamal

1. Bilamal
2. Kranjikana
3. Srambuli
4. Muchidubaru
5. Bikapanga

6. Mandamaska
7. Ambrikhol
8. Gummapadar
9. Karlangi
10. Puskadi
11. Guibali
12. Dharanimaska
13. Mundimaska
14. Dhumamaska
15. Muskasaru
16. Saperibhata
17. Dhudsi
18. Khadapanga
19. Rajam
20. Garanga
21. Paikapada
22. Silkudi

Cluster-III, Headquarters, Gumma

1. Pukur Colony (Gumma)
2. Tidipadar
3. Guchuka
4. Saperi
5. Gambhari
6. Sushabali
7. Pagerpada
8. Salapata
9. Jamuguda
10. Kineri
11. Randanga
12. Kranja
13. Kanibhata
14. Pedam
15. Nuamunda
16. Bariguda
17. Pringel
18. Kalanguda
19. Dupi
20. Mahabali
21. Mathaghali

Cluster-IV, Headquarters: Kanibaru

1. Kanibaru
2. Sipidihol
3. Gokampanga
4. Talangpadar
5. Bhandarsal
6. Pairamal
7. Sindhibali
8. Lidarang
9. Bhaluguda
10. Sukarpadar

Cluster-V, Headquarters: Balipada

1. Balipada
2. Gurlimaska
3. Gunusupa
4. Targabali
5. Adalangu
6. Girisasa
7. Badakumudi
8. Sadangi

Cluster-VI, Headquarters: Ushabali

1. Ushabali
2. Pikusi
3. Sanaguchuka
4. Dehabali

Initially the project area may be divided into three clusters. The other clusters may be attached as suggested below to be functioned during the Eighth Plan Period. Balipada cluster may be attached with Belghar, Kanibaru cluster with Bilamal and Ushabali cluster with Gumma.

The distance of the end points may be little more yet it has to be managed with difficulty at the initial stages. The new approach may be experimented with three clusters. On achievement of success it may be extended to the other three clusters during the Ninth Plan Period.

Mobile treatment-cum-*motivation unit*—There was a misnomer that animal husbandry is a fancyful undertaking of the rich and affluent people. But the misnomer has been dispelled. The small and marginal farmers and landless agricultural labourers have not come forward and developed interest for keeping animals as a dependable source of income. In fact, livestock farming has become a way of life for the rural community and poor people have taken to livestock farming in large numbers. But the idea has not percolated down to the tribal areas and more so for the primitive tribal areas mainly due to non-exposure of the tribal people to the improved livestook farms. Non-exposure is again due to lack of road communication facilities. No tangible efforts have been made to organise demonstration farms and livestock shows and fairs inside the project area to motivate the people. It is understood that no training programme on animal husbandry practices for the farmers has yet been arranged anywhere inside the micro project area. The question of selection of the target groups may arise at the second phase. Anyhow motivation campaigns should precede introduction of any

programme on animal husbandry. Mass communication through meetings, seminars and group discussions in the form of "Prani Sampada Asharas" supported by audio-visual aids, distribution of pamphlets in local language and poster display may be arranged. This has yielded so good result in the past that several demands were made by villagers themselves for such meetings. It is, therefore, proposed to introduce a mobile treatment-*cum*-motivation unit initially in order to propagate the schemes on animal husbandry and to render door step health services to the livestock which itself is a practically propagation work. It is to be noted that the tribals have neither time nor desire to give hospital treatment to the present stock of unproductive livestock assets when they fall sick. When they are even reluctant to take ailing human beings to the hospitals, the question of expecting the sick animals to be taken to headquarters dispensary does not arise. Hence, the only alternative to render treatment to the sick animals is offering domicillary treatment.

A mobile treatment-*cum*-motivation unit is proposed to be introduced in the model of " Surgeon on Wheels " and " Mobile Hospital " Schemes of Rajasthan organised to render health services to human beings when people do not develop awareness for modern hospitalised treatments. The scheme had wonderful success in popularising modern treatments among rural folk of Rajasthan. In Orissa, in the past, the TVS (Touring Veterinary Surgeons) were on their wheels in all the days to render door-step treatment to the livestock in the area under his jurisdiction. In due course the practice has been stationery. But all the same, the practice of rendering door-step service and propagating of breeding and fodder by the Livestock Inspectors of the Livestock Aid Centres (LAC) is still continuing. They are required to tour for 20 days in the afternoon after the Livestock Aid Centre duty is complete in the forenoon. But the Livestock Inspectors are not scrupulously following their job chart as there is no effective supervision at higher levels. The position in respect of the Veterinary Institutions of Belghar and Gumma is still worse as no technical staff members are staying at the institution headquarters nor are they attending to their prescribed duties.

The proposed Mobile Treatment-*cum*-Motivation Unit may include initially one Livestock Inspector and one Attendant. Two bicycles may be given to them for their movement on duty. They will carry kit bags with minimum instruments including castrator for camp use and emergent medicines. When road conditions improve the bicycles can be replaced by two wheeler automobiles. Ultimately the unit is to be strengthened during the 9th Plan Period with a Veterinary Assistant Surgeon as unit-in-charge and a jeep for quick transportation and effective execution of the programme. In addition to this the motivation work is to be augmented through the specially designed cassettes on Animal Husbandry, Fodder Development, etc., to be projected under Adult and Elementary Education Programme proposed under Education Chapter.

Improvement of breeding— It has been observed that the livestock asset of the Kutia Kandha villages are indigenous barring a few improved progenies of the pure Jersey cow-bull supplied earlier. There is a need for developing crossbred animals. The benefits of crossbreeding the indigenous cattle with recognised exotic dairy breeds for the production of crossbred cows possessing high potential for milk production and reproductive efficiency are known since long. This breeding policy which was adopted during the Third Five Year Plan period is continuing over the plans and it is well-established that the crossbreds are well adopted to our agro-climatic conditions and have much higher production levels compared to our local cattle. It is therefore, proposed that breeding bulls should be maintained by Government agencies at Government cost for the Eighth Plan period in view of the failure experienced in respect of maintaining a bull on host basis. It should be a scheme for mainteinance of two pure jersey breeding bulls in a centre. The centres are to be located nearer the villages to which the

It is proposed to locate two bull centres at two cluster headquarters equipped with one Livestock Inspector and one Contingent Attendant—One at Belghar cluster headquarters and the other at Gumma cluster headquarters. Health coverage of the bulls will be taken up by the Livestock Inspector and the area Veterinary Assistant Surgeon. The Attendant will look after the feeding and breeding care and management under the direct supervision of the spot Livestock Inspector. The L. I. is to maintain the performance records of the bulls and all other relevant records including accounts. Each bull is supposed to render 120 services in a year to yield 120 calves—60 male and 60 females carrying 50 per cent exotic blood. These female calves subsequently can be covered under the calf-rearing project with 100 per cent Central Government assistance.

SCHEME

Non-recurring expenditure

1.	Cost of construction of sheds @ 60 Sq. ft. × 2 = 120 Sq. ft. with asbestos roof.	Rs. 16,000·00
2.	Cost of 2 bulls @ Rs. 8,000 each ..	Rs. 16,000·00
3.	Cost of equioments like buckets, chains, sickles, etc.	Rs. 500·00
		Rs. 32,500·00

Recurring expenditure per annum

1.	Feeds @ 3 Kg. per bull per day 3 × 2 × 365 = 2190 Kgs. @ Rs. 3 per Kg.	Rs. 6,570·00
2.	Wage of one Contingent Attendant @ Rs. 25 per day	Rs. 9,000·00
3.	Medicines, etc.	Rs. 500·00
4.	Contingency	Rs. 500·00
		Rs. 16,570·00
	Non-recurring expenditure per annum per centre ..	Rs. 32,500·00
	Recurring expenditure per annum per centre ..	Rs. 16,570·00
		Rs. 49,070·00
	For 2 Centres × 2	Rs. 98,140·00

After observing the performance of the bull centres the Scheme may be extended to other clusters during the 9th Plan period.

Development of Dairy Farming—"National Commission of Agriculture has rightly observed that Dairying as an additional enterprise is an instrument of great siqnificance for improving the socio-economic condition of the weaker sections of rural population who are nothing other than the small/marginal farmers and agricultural labourers". This observation of T. S. Sohal, Head, Division of Dairy Extension, NDRI, Karnal is relevant in the context of the tribal situations prevailing in Kutia Kandha area. Any programme aiming at promoting dairying in the hands of the weaker section of the rural population should be sure of success in realising the basic objective of improving their economic condition. Both in trems of the number and need the small/marginal farmers and agricultural labourers require immediate attention.

The Dairying is financially not a paying proposition would be a matter of the past. If the recent improvements in the milk potential of the animals and scientific techniques in dairy management are kept in view, the doubt lurking in the minds of some persons regarding the ability of the marginal farmers and agricultural labourers to make a success of dairying as an economic enterprise would be removed.

In view of the experiments, made and findings obtained thereof, it is proposed to introduce the dairy scheme in a limited number of villages of Kutia Kandha project area. The scheme is proposed to be introduced in the following villages, namely, Rangaparu, Burlubaru, Pukuru Colony and Guchuka.

All these villages are situated near the Belghar-Tumudibandh Road. Their situation near road side will facilitate marketing of milk and milk products. Breeding and health coverage is also proposed to be provided at the cluster headquarters situated very nearer to these villages.

Since this scheme is instituted on experimental basis and marketing facilities have not yet been created, it is being extended to a few families of the above 5 villages. It is within the knowledge of the planners that huge resources would not be available to these beneficiaries, yet size of the resource should not be the only determinant for adoption of these schemes because it is proposed to utilise the unemployed and under-employed family members of the marginal farmers and landless families, taking into consideration their aspiration and efforts to rise higher with the help of the new schemes.

An estimate of the dairy units to be supplied to the beneficiaries—It is proposed to extend the dairy scheme facilities to three families of each village on an experimental basis of five villages. Hence, the total number of families under the scheme comes to 15. Each unit will have two crossbred Jersey cows. Breeding facilities are provided near the villages through pure Jersey bull at the cluster headquarters where health care facilities are also available.

The scheme is to be operated in the pattern of IRDP under D. R. D. A., Phulbani as the beneficiaries are Scheduled Tribes. The norms for granting subsidies to the tribal being 50 per cent the same facilities are to be extended to the beneficiaries of the present scheme.

The unit cost for two crossbred Jersey cows per beneficiary family is as follows:—

(*i*) Cost of two crossbred Jersey cows—		
(*a*) Yielding 8 litres and above per day 2×5,000	..	Rs. 10,000·00
(*b*) Insurance	..	Rs. 450·00
(*c*) Feed for 9 months (First lactation period)	..	Rs. 1,800·00
(*d*) Shed and equipment	..	Rs. 2,000·00
(*e*) Medicine charges will be availed of from IRDP at the rate of Rs. 200 per annum. Additional requirement will be met by Belghar Veterinary Dispensary.		..
(*f*) Transport charges per unit	..	Rs. 500·00
Total	..	Rs. 14,750·00

In view of the trend of increase in the cost of crossbred cows, feed, transport, shed and equipments, the unit cost needs to be revised at the level af NABARD, specially for the primitive tribes.

(ii) After the first lactation period (Nine months) continuance of feed supply should be ensured on subsidy basis by the K. K. D. A. The cost for 15 units Rs. 14,750×15 = Rs. 2,21,250·00.

Development of Fodder Resources—Adequate utilization of fodder is of utmost importance for economic milk production. In the hilly terrain tracts of Kutia Kandha project area the cattle mostly depend upon forest grazing. Paddy straw is available only for the livestock maintained by affluent farmers. Residues of different agricultural crops are more or less available with the Kutia Kandha families but the quantum is much less. The Kutia Kandhas cannot afford to give concentrated feed to the cattle. Hence they are mostly to depend upon the forest fodder which are otherwise unutilized.

The fodder in the hilly areas mainly consists of tree-leaves, grass. A large number of samples of tree-leaves, grasses, shrubs, etc., commonly fed to the animals were collected, analysed and evaluated on the basis or chemical composition. Their nutritive values were determined. The trace-mineral status of some tree-leaves and the level of incriminating factors like tannic acid and oxlates were also studied in Bengal. A similar study should be made with the forest fodders of Kutia Kandha hills to determine the nutritive value of the tree-leaves, grass and shrubs available there by the Animal Husbandry Department. Since the nutritive values of the samples is likely to be up to the mark as was the case with the Darjeeling hills, West Bengal, depending on the size of collection of such fodder, the quantity of concentrated feed may be reduced when given.

The task of increasing productivity of the local cattle should be carried out through distribution of pure cross-bred Jersey bulls besides taking up feeds and fodder production in co-ordination with the Forest/A. H. Department, DRDA, training of farmers for better practices and increased health care services. At a stage when road communication is made and electricity is supplied, the natural breeding programme may be replaced by Artificial Insemination preferably with Frozen Semen technology.

Top tree-feed species are a good source of providing fodder for the livestock in areas where land for green fodder cultivation is rare. In fact the pressure on land is very high in the Kutia Kandha area and the average holding size is very small. Hence there would be no inclination or willingness for sparing land for green fodder cultivation. Top-tree feed species can be grown in the homestead land premises as green hedges which would function as a fence and at the same time would yield adequate nutritive foddar for the livestock. The seedling of the following species may be supplied to the Kutia Kandhas with instruction to plant them along the green hedges, so that when these seedlings grow maintenance of the green hedges would not be necessary and these trees would replace them. There is provision for availing of this facility during the Eighth Plan period under the plan schemes of A. H. Department. The seedlings are available free of cost.

Recommended species are as follows:—

1. Subabul
2. Sisu
3. Anjan
4. Kanchan
5. Gohira
6. Dhalasiria

The above trees can also be grown in waste land of the villages to provide fodder to the livestock. Most of these fodder tree leaves contain TDN values above 55 per cent on dry basis and are better energy sources for the dairy cows.

Piggery Scheme—In his opening remarks of "Swine Husbandry and Piggery Products" published by the Ministry of Food and Agriculture, Government of India, Mr. Kaura mentions "The Pig excels all other animals in the economy with which it can convert farm bye-products and other vegetable matter into edible flash of high nutritive value and yields the maximum return for the money invested on it. It can utilize garbage, spoiled flour and grains which may be harmful to other animals. With better feeding and proper breeding and efficient herd management, swine production can be made much more remunerative than it is at present in India. It is a very prolific breeder and a quick grower. A sow usually breeds twice a year and at each farrowing brings forth about six to eight piglets. Each piglet attains the weight of about 150 lbs. or more in about six to eight months' time when it can be slaughtered for food. The above words of Mr. Kaura adequately describe the benefits of an avocation like pig husbandry.

In Orissa, pigs are invariably maintained by the economically backward classes who are mostly Harijans and tribals. The pigs maintained at present are mostly non-descript black-quality with poor productive potential.

Sometime back Government of Orissa in Animal Husbandry Department introduced a scheme on piggery development in a pilot programme specially in Tribal Development Agencies and in drought-prone affected projects which ran as under.

Distribution of cross-bred piglets were made at the rate of three females and one male free of cost to tribal families on the condition that they would return the same number of progenies born out of them within 18 months. This was a good scheme for the tribal population, particularly from the stand point of its economic viability. But the scheme could not be effectively implemented and it did not reach the target group in the remote primitive tribal area. There is a need for reintroduction of such a scheme with necessary modifications in respect of provision of feed for one year free of cost.

Rearing of pigs is already in the hands of Harijans and tribals. But the conditions under which the rearing is made do not give adequate economic margins. This population continues to adopt old, primitive and unhygienic methods. As a result the quality of pigs and preparation of pork products are very low. Even then they yield sufficient returns to their owners. But with improved breeding sanitary housing and proper feeding, they can be a source of much greater profit to their owners.

The following villages of Belghar project are selected for introduction of piggery scheme. The old scheme of giving three sows and one exotic cross-bred boar free of cost as one unit to a beneficiary family under the condition that he would return the same number of piglets within 18 months is to be revived. Each village may be given five units. The cost of the scheme would be borne partly by the A. H. Department, D. R. D. A. and partly by the Micro Project, Belghar.

Name of villages

1. Dupi
2. Tidipadar
3. Guchuka
4. Kanibaru
5. Batipada
6. Gurlimaska
7. Deogada
8. Rajam

The scheme is meant for rotating the stock to other beneficiaries after return from the old ones. The scheme would be extended to five families of each of the selected villages during the year 1992-93. Thereafter the rotation stock would be given to eight more neighbouring villages selecting five families from each.

Estimate of the scheme

Non-recurring expenditure—

(*a*) 1. Cost of one exotic or cross-bred boar, ten months old.	Rs. 1,000·00	}	One time expenditure.
2. Cost of three improved sows, 8 months old Rs. 400 × 3.	Rs. 1,200·00	}	
(*b*) Cost of pig-sty and equipments ..	Rs. 1,000·00		
	Rs. 3,200·00		

Recurring expenditure—

1. Cost of feed for one year 3 sows and one boar @ 2 Kgs. per day for each animal 2 Kgs. × 4 × 365 × Rs. 2.	Rs. 5,840·00

Note—Non-recurring expenditure at (a) above is one time expenditure. After the first batch of beneficiaries get the pig unit, they return equal number of piglets-3 female and one male which are to be redistributed to the second lot of beneficiaries. This is how the pig-units rotate from one batch of beneficiaries to the next and so on. The one time investment over the pig-units will be a revolving investment.

The non-recurring expenditure at (b) is to be given to every batch of beneficiaries. The recurring expenditure is to be paid to each subsequent batch of beneficiaries for one year only. The cost of the feed and construction cost of the sty are to be met out of K. K. D. A. funds.

Poultry—In recent years the concept of rural development is very much associated with the creation of job opportunity and establishment or small scale cottage industries. Keeping in view the local demand, poultry farming is now recognised as one of the most important source of income in the rural areas, particularly for the vast number of unemployed rural youths. Day by day it is getting the status of an industry.

Poultry and ducks are the most popular livestock after cattle. They provide nutritive meat and eggs and are a source of additional income to the villagers. Poultry business is becoming more and more profitable. Average monthly profit per hundred birds is also increasing day by day irrespective of the farming size.

There are unsuccessful cases of poultry farms under beneficiary oriented Rural Development Programmes but in most cases the failures are due to lack of practical training of the farm-owners relating to optimum allocation of resources to different cost components, rearing length of birds and the profitability correlation. That is why wide variations are observed in rearing length and other factors.

Keeping this in view, extensive poultry training programmes coupled with adequate and easy availability of institutional credit has to be arranged under the project programme for the intending poultry farmers. The training component for poultry management being very important, adequate pre-arrangements for training of the beneficiaries at the nearest district farms are to be made in collaboration with D.R.D.A. If properly managed, the average profit per month per hundred layer birds comes to Rs. 500.

Two different types of poultry farming may be introduced. (1) Layer Poultry Farming, (2) Broiler Poultry Farming. The former is for egg purpose and the latter for chicken, meat purpose.

Scheme for Layer Poultry Farm—A unit of 100 birds, the Kutia Kandha families traditionally maintain indigenous poultry layer stock which does not require any training or technical knowhow for rearing. But in case of improved layer poultry farming technical knowledge, training and experience are required. The system of providing day old chicks under the scheme is being followed in non-tribal areas mostly where adequate backward and forward linkages are available. But in case of a primitive tribe and in an area where veterinary aid is not yet fully ensured, it is advisable to supply pullets at point of lay, i. e., about 5 months old.

The unit cost is calculated accordingly as follows :—

Non-recurring expenditure—

(*i*) Layer shed 200 Sq. ft.	..	Rs. 3,000·00
(*ii*) Equipments at the rate of Rs. 5 per layer bird.	..	Rs. 500·00
(*iii*) Supply of pullets 5 months old 100 numbers (One time supply) @Rs. 50 per bird.	..	Rs. 5,000·00
(*iv*) Feed for two months @ 3 Kgs. per month per bird, Rs. 3 per Kg. 100×3× Rs. 3×2.	..	Rs. 1,800·00
(*v*) Miscellaneous expenses like electricity, medicines, insurance @ Rs. 5 per bird.	..	Rs. 500·00
Total	..	Rs. 10,800·00

Note—(*i*) The scheme is proposed to be operative with effect from 1993-94 when electricity is expected to be supplied and road conditions with transport facilities are improved for regular supply of feed and replacement of birds. It is also expected that by then adequate health coverage would be available at cluster headquarters. The marketing facilities are likely to develop by 1993-94.

(*ii*) The unit cost has been modified in consideration of the escalation of prices at present. The unit cost should be revised from time to time in consultation with NABARD to sponsor the beneficiaries under IRD Programme.

(*iii*) In respect of the breed of birds to be supplied the Kalinga Brown Egg layer variety developed by the Central Poultry Breeding Farm is preferred. The advantages of this breed are as follows:—

1. Body weight at 16 weeks	1·100 kg.
2. Body weight at 72 weeks	1·689 kg.
3. Hen housed production up to 72 weeks of age	265·63
4. Hen day production up to 72 weeks of age	272·39
5. Age at 50 per cent production	21-22 weeks
6. Age at peak production	29—32 weeks
7. Percentage production at peak	89·8%
8. Period for which 8 per cent production persits	29—40 weeks

In the event of non-availability of this breed, other high-breed variety of pullets may be obtained from the usual supply of the Animal Husbandry Department. Layer poultry farming has to be introduced in those villages from where eggs can be quickly transported and easily marketed. The following villages are recommended to start with:—

1. Kadapana
2. Madalkana
3. Burlubaru
4. Deogada
5. Guchuka

Each village may be allotted three units to three landless or marginal farmer families.

Broiler Poultry Farming—The broiler production has shown a phenomenal increase in recent years. The poultry farming, which was in early sixties a backyard venture has transformed itself to a strong agro-base industries due to its remarkable adaptability to wide range of environment and quick financial returns. Broiler farming has been accepted as the foremost among the subsidiary occupations of the farmers to augment their income because of its quick return, minimum space requirement, easy maintenance and greater efficiency in conversion of feed into meat than any other livestock enterprise.

The advantages of broiler poultry farming may be summarised as follows :—

1. There is a continuous and pressing demand for broiler meat everywhere. The demand is on the increase.
2. Under average conditions the cost of production per kg. live broiler is Rs. 14·00 whereas the sale price of live broiler is Rs. 28·00 on the average. The profit margin is alluring.
3. Feed constitutes approximately 60 per cent of the working cost for broiler rearing.
4. Cost of chick constitutes less than 30 per cent.
5. The all-in and all-out systems of broiler rearing are the most scientific and are conducive to the best result.
6. The broiler farming is like a sprint—a good start is all important
7. The broiler chick must increase its weight by 40 times in 40 days.
8. Marketing of broilers means more than merely selling. It involves a planned effort to create an awareness of benefits of broiler meat.

In view of the constraints of the locality in respect of road and communication conditions, non-supply of electric energy, non-availability of poultry feed at shorter distance and inadequacy of health coverage prevailing now, the scheme is proposed to be started only in 1994-95.

Unit Cost—Scheme for establishment of a broiler unit of 100 birds in a monthly chain in cage system.

Keeping poultry in cage system is most modern breeds being highly ecomomic, hygienic, resulting more return per bird. For rearing broilers, community cage system has proved to be highly beneficial with the following advantages:—

1. Requirement of space is minimum,
2. Cost of litre is practically nil,
3. Labour cost is lowest,
4. Better hygienic conditions, resulting minimum disease possibilities and better growth rate of broilers. The chicks are to be reared in two stages under the scheme. In the firsf stage chicks will be in a small room 8′×6′ up to 4 weeks of age and then these chicks would be shifted to two cages 6′×3′×1½′ each containing 50 chicks. They will remain there from 4 to 8 weeks (marketing age).

Non-recurring expenditure :—

(*i*)	One small room of 8′×6′	..	Rs. 2,000·00
(*ii*)	One shed of 10′×7′ without wall or cemented flooring @ 15 Sq. ft.	..	Rs. 1,050·00
(*iii*)	Wooden cages of 6′×3′×1½′ fitted with welded mesh flooring 2 Nos. Rs. 500 each ×2.	..	Rs. 1,000·00
(*iv*)	Chick feeder, up to 4 weeks of age 4 Nos. Rs. 50×4.	..	Rs. 200·00
(*v*)	Country type brooder 1 No.	..	Rs. 200·00
(*vi*)	Country type waterer up to 4 weeks of age 4 Nos. Rs. 25.	..	Rs. 100·00
	Total	..	Rs. 4,550·00

Recurring expenditure for 8 weeks (For one cycle):—

(*i*)	Day-old chicks 300 Nos. @ Rs. 7·50 each	..	Rs. 2,250·00
(*ii*)	Broiler feed 5 mt @ Rs. 3,000 per M. T.	..	Rs. 15,000·00
(*iii*)	Medicines, electrical charges and miscellaneous expenses.	..	Rs. 300·00
	Total	..	Rs. 17,550·00

Approved unit cost is provided under the D.R.D.A. Programme with bank financing. The unit cost has been revised keeping in view the escalation of prices. But it also needs revision from time fo time.

In view of the extreme poverty of the primitive tribes this alluring scheme is worth encouraging for them. The K.K.D.A. should arrange funds for subsidised feed to the beneficiaries on a regular basis. Broiler poultry farming is recommended to be introduced in the following three villages initially on experimental basis. On higher demand, this may be extended to neighbouring villages.

1. Tidipadar
2. Dupi
3. Burlubaru

Each village may be allotted 3 units of broiler poultry farms to 3 landless or marginal farmer families.

Duckery—Duck farming is as much remunerative as the poultry farming in view of the increasing demand for duck eggs. The propagation of duckery scheme with Khaki Campbell Variety breed has been popular. The breed is highly adaptable to local conditons with the only limitation that scheme should be operated in the vicinity of water sources. In fact, in controlled conditions duck rearing can be done without a water source like pond, tank, stream, etc., as water is only required to dip the head of the ducks as mechanism to regulate the heat of the body which can be done by providing a water-pot fitted in by cold water from time to time. This process is labour intensive. Therefore, it is better to recommend initially duck rearing in villages having natural water sources which is highly economic.

The Khaki Campbell Variety of ducks is highly reputed for higher rate of production among other varieties of ducks, so much so, under ideal conditions of feeding and management there are instances of laying 365 eggs round the year.

The existing scheme in operation under D.R.D.A. with a unit cost of Rs. 1,800 provides supply of 25 ducks and 3 drakes. The unit cost needs to be revised in view of the escalation of prices. The process of management adopted in some districts is as follows. Day-old Khaki Campbell ducklings are procured from Central Poultry Farm, Bangalore, reared at the Veterinary Institution for two months and at this stage supplied to the beneficiaries along with two bags (75 Kgs. $\times 2$) feed to last up to production age. The birds are provided with concentrated feed in the sheds and then let out to tanks (water source) after 8 A.M. The concentrated feed meets a part of the food requirement of the birds. The remaining part is recouped from the tanks. The above scheme is recommended to be adopted in Kutia Kandha Project area with some modifications.

The amount of feed supplied to the beneficiaries at the time of supply of duckings which is estimated to continue till production age is not adequate as far as Kutia Kandha area is concerned. There is a need for continuance of feed beyond the initial age of production in view of the extreme poverty of the tribals. The feed should continue for at least one year during the production period. The additional expenditure on feed is to be borne by the K.K.D.A. This arrangement is supposed to make the scheme full-proof.

The following villages which have water sources are recommended for introduction of the Duckery Scheme. Only three landless and/or marginal farmers may be selected from each village for this scheme:—

1. Tuakola
2. Pukura Colony
3. Rangaparu
4. Rajam
5. Nuamunda
6. Pedam
7. Kranja
8. Ushabali
9. Dharanimaska
10. Bhaluguda

Although ponds, tanks and other types of water sources are available in these villages, which are suitable for introduction of duckery scheme, other important factors like road communication, marketing facilities, etc., for easy delivery of ducklings and feed, etc. are to be considered for establishing duckery units. It is, therefore, recommended that in the first phase duckery units be provided to the following four villages at the rate of three units each. On assessment of the success of the schemes further extension to other villages will be taken up:—

1. Rajam
2. Pukuru colony
3. Rangaparu
4. Tuakole

UNIT COST

Non-recurring expenditure

1. Cost of duckshed with floor space @ 3 Sft. per bird and cost of ducklings and drakelets feed, equipments, medicines, etc.	Rs. 3,000·00
	Rs. 3,000·00

1991-92

Phasing and estimating the Eighth Plan cost

Non-recurring cost

1. Two bicycles (one for the L. I. and another for Attendant) Kit-bags containing instruments including castrator, medicines, etc.	Rs. 10,000·00

Recurring expenditure

1. Salary of the L. I. and Attendant for 3 months @ Rs. 1,600 L. I. Rs. 750 Attendant	
Rs. 2,350×3	Rs. 7,050·00
Total N. R.+R. E.	Rs. 17,050·00

1992-93

Non-recurring expenditure

1. Establishment of two breeding centres at Belghar and Gumma cluster H. Q. @ Rs. 32,500×2	Rs. 65,000·00
2. Establishment of 9 poultry (layer) units in Kadapana, Madalkana and Burlubaru villages, Unit cost Rs. 10,800×9	Rs. 97,200·00
3. Establishment of 12 duckery units in Rajam, Pukuru colony, Rangaparu and Tuakola villages (Unit cost Rs. 4,000)	Rs. 48,000·00
4. Providing 40 piggery units in Dupi, Tidipadar, Guchuka, Kanibaru, Batipada, Gurlimaska, Deogada and Rajam villages (Unit cost Rs. 9,040×40)	Rs. 3,61,600·00
	Rs. 5,71,800·00

Recurring expenditure

1. Salary of 3 L. Is. and 3 Attendants (Rs. 1,600+Rs. 750)×3	Rs. 84,600·00
2. Medicines for the mobile treatment unit and the breeding centres	Rs. 2,500·00
3. Misc. contingencies for mobile treatment unit and breeding centres for repair of cycle, lanterns, kerosine, etc.	Rs. 900·00
	Rs. 88,000·00

Total N. R. W.+R. E.	Rs. 5,71,800·00
	Rs. 88,000·00
	Rs. 6,59,800·00

1993-94

1.	Providing 9 Dairy units in Rengaparu, Burlubaru and Dupi villages (Unit cost Rs. 14,700 × 9).	Rs. 1,32,300·00
2.	Providing 6 Poultry (layer) units in Deogada and Guchuka villages (Unit cost Rs. 10,800 × 6).	Rs. 64,800·00
3.	Providing 9 Poultry (Broiler) units in Tidipadar, Dupi and Burlubaru villages (Unit cost Rs. 22,100 × 9).	Rs. 1,98,900·00
		Rs. 3,96,000·00

Recurring expenditure

1.	Salary of 3 L. Is. and 3 Attendants Rs. 1,600+750 × 3 × 12.	Rs. 84,600·00
2.	Medicines for the mobile treatment unit and two breeding centres.	Rs. 2,500·00
3.	Misc. Contingencies	Rs. 900·00
		Rs. 88,000·00
	Total N.R.E.+R.E. Rs. 3,96,000·00+Rs. 88,000·00 ..	Rs. 4,84,000·00

1994-95

Non-recurring expenditure

1.	Providing 6 Dairy units to Pukuru colony and Guchuka (Unit Cost Rs. 14,700) Rs. 14,700 × 6.	Rs. 88,200·00
2.	Providing non-recurring for pigsty and equipments to 40 families @ Rs. 1,000·00+Feed for one year Rs. 5,840·00 × 40.	Rs. 2,73,600·00
		Rs. 3,61,800·00

Recurring expenditure

1.	Salary of 3 L.Is. and 3 Attendants @ Rs. 1,600+750 × 3 × 12.	Rs. 84,600·00
2.	Medicines for the mobile treatment unit and two breeding centres.	Rs. 2,500·00
3.	Misc. Contingencies ...	Rs. 900·00
		Rs. 88,000·00
	Total NRE+R.E. Rs. 3,61,800·00+Rs. 88,000·00 ..	Rs. 4,49,800·00

ABSTRACT

1991-92	..	Rs. 17,050·00
1992-93	..	Rs. 6,59,800·00
1993-94	..	Rs. 4,84,000·00
1994-95	..	Rs. 4,49,800·00
		Rs. 16,10,650·00

HEALTH

During the time of British India, the Kutia Kondhas of Belghar area were depending for the medical care on the dispensaries located at Tumudibandh and Ambadola. The latter is located in Muniguda block of Gunupur Subdivision of Koraput district. During that period emphasis was on curative aspects only. The then Government of India remained satisfied by providing a dispensary at Tumudibandh. Practically nothing was done for the Kutia Kandha of Belghar area. Of course due credit must be given to the British administration for stoping the practice of Meria sacrifice prevailing among the Kandhas. After Independence, the Government of Orissa, H. & T. W. Department started a 12 bedded hospital at Belghar which was opened on the 21st August 1961. It continued as such under the above Department with 3 male and 3 female indoor beds. This hospital was taken over on the 1st September 1978 by the Health Department and continuing as such.

TABLE 47'1

Sanctioned post

Category of staff	Sanctioned	In position at the time of visit
Medical Officer	1	No
Pharmacist	1	1
Dai	1	1
Ward attendant	2	2
Cook	1	No
Sweeper	1	1

One Medical Officer who was posted there has been transferred. His work is being managed by sending one Medical Officer on deputation. The Cook has been deputed elsewhere as diet is not supplied to the indoor patient.

The staff position needs repair to be augmented and the existing Hospital buliding and staff quarters need major, to be dealt with later. Tumudibandh PHC. started functioning from the 7th May 1969. There is one sub-centre located at Gumma. The sub-centre has one Female and one male multipurpose worker.

Financial allocation in the project area by Health Department.

(*a*) Belghar Hospital —	(*i*) Establishment	..	Rs. 1,29,000·00
	(*ii*) Medicine & equipment as per norms fixed for Indoor & Outdoor patients.		Rs. 20,000·00
	Diet	..	Rs. 12,000·00
	Total	..	Rs. 1,61,000·00
(*b*) For two Sub-Centres ..	Establishment—		
	2 female workers	..	Rs. 36,000·00
	2 male workers	..	Rs. 36,000·00
	Medicine Rs. 3,000 × 2	..	Rs. 6,000·00
	Total	..	Rs. 78,000·00

The Health Department is making provision for Rs. 2,39,000 to be spent In Belghar project area. The amount is not fully utilized due to vacancy of many sanctioned posts and non-provision of diet. As such the people in the area do not get much benefit. The Micro Project in addition supplies medicines worth Rs. 10,000·00 every year to the Hospital.

TABLE 4·7·2

No. of patients treated at Belghar Hospital

Year		O. P. D.	Indoor
1985-86	..	15,789	48
1986-87	..	17,164	53
1987-88	..	18,068	114
1988-89	..	21,699	173
1989·90	..	21,424	117
1990-91	..	18,887	112

Source—Belghar Hospital

From the above it is clear that the Kutia Kandhas who form the majority in the area have accepted the modern day treatment. The fall in 1990-91 both in O. P. D. and indoor is attributable to the vacancy of the post of Medical Officer. Rather we have not been able to provide the necessary medical care and I am in doubt whether the national goal for health for all by the year 2000 can be achieved in the area.

That does not mean that the Kutia Kandhas are free from their social customs, habits, superstitions, belief and blind faith. The village Priest Jani still influences his co-villagers in matters relating to health or sickness. For example, Muni, aged 2 years, daughter of Butuku Majhi of the village Rajam suffered from fever. She was taken to Belghar Hospital where she was given some injection and tablet. Shri Butuku Majhi also purchased a bottle of long acting sulpha. But it was told that Shri Majhi after returning from the Hospital offered one pig, 2 chickens and 4 bottles of liquor to satisfy the evil spirit who is supposed to have inflicted evil-eyes. Such instances are many in the area. The Kutia Kandhas are in a transition stage as they are inclined upon of accepting modern day treatment and at the same also fearful about the social customs and practices.

General Health Profile—The general health condition including physical developments of the Kutia Kandhas is same as that of the Oriyas and other Scheduled Caste (Panos, Dombs) living in the area. In the project area 108 families out of 1,001 were interviewed by the Investigators with a total population coverage of 482. Family size, thus, comes to 4·45. In these families there are 10 males who are 60 or more years of age while there are 3 females of 60 or more years of age. It indicates that an average a male lives longer than a female. Only 3 males have more than one wife living (2 wives each person). In other words in 2·7·/. of the families there are more than one wife living. Average number of children born (alive + still birth) in each family is 3·4 as there are 353 live births and 20 still births.

Out of 353 children born alive, at the time of investigations 256 are living, 97 have died as infants or toddler. As the couples could not say exactly the age of child when died, the figures are taken as a whole as it may lead to wrong calculation of infant mortality rate. It is clear that 27·5 ·/. of children could not reach adulthood, Out of 108 families contacted, there was only one couple with primary sterility (age of wife is about 47 years) which comes to about 1 per cent. Amongst the Kutia Kandhas, family is the smallest social unit. It is nuclear in character. In 7 house-holds, out of 108, the head of each family is unmarried (6·5 per cent of the total house-holds). Though generally the family is nuclear, there are evidence enough to indicate that joint family system is still prevalent as 18 sons and 12 daughters are staying with their parents even after marriage. Hence, 27·5 per cent of the families lead a join tfamily system.

Personal and Environmental sanitation—Houses in Kutia Kandha area are built in rows in east-west directien with a very wide village road. In the middle of one end of the village road the village deity is installed. The houses are mud walled with thatched roof or tiled out, These houses have no windows and the entrance to the house is very low. All the 108 families contacted do not know that windows are necessary for the living room for good ventilation and light. No garbage, cowdung, pigs dropings, etc, are heaped at the village road or thrown here and there revealing a clean surrounding. Houses have two rooms, one for living, other for storing with wide verandah on both sides. The back velandah is used for fowls and pigs while the front verandah for retiring, gossping, etc, in the evening time or during leisure time. The houses are plastered regularly with cow-dung mixed with a black soil. As such the houses in the village and its surrounding are reasonably clean.

Personal hygiene—The family schedule was admininistered to as ascertain their knowledge about personal hygiene. 74 households use soap at the time of bath, while 37 do not. The use of soap during bath is not regular but occasional due to obvious reason of economy.

Cleaning of clothes :

By soap	..	35 families
By burnt ashes	..	57 families
Both	..	16 families

However, during the visit few things were noticed on which the population can be divided into 3 groups with regard to personal hygiene—

(*a*) Children who depend on their mother for keeping them clean—mostly such children remain unclean—it is due to lack of knowledge of the mother.

(*b*) Young people both male and female below 25—30 years of age. There are concious of personal hygiene, their made of talk and clothes. There is definitely a change in because of urban contact.

(*c*) Elderly above 30 years. This group follows the customary habits and lack the sense of personal hygiene.

Health problems—Malaria-highly endemic, annual parasite index of Tumudibandh Block varies from 55 to 114.

TABLE 4·7·3

Examination of blood slides in Tumudibandh Block

Sl. No.	Year	No. of blood slide collected	No. found positive	P, V.	P. F.	A. P. I.
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	1986	9,373	1,683	223	1,640	71·44
2	1987	9,141	1,701	251	1,450	62·59
3	1988	8,635	1,529	142	1,387	55·64
4	1989	12,765	3,369	577	2,782 + 10 mixed	113·58
5	1990	15,025	4,123	735	3,386 + 2 mixed	86·17

(Source—P. H. C., Tumudibandh)

TABLE 4·7·4

Total fever cases treated at Belghar Hospital

Year (1)	Total OPD case (2)	Fever case (3)
1985-86	.. 15,789	4,056
1986-87	.. 17,164	3,837
1987-88	.. 18,065	4,147

During visit to the area several chiidren in some villages were found to have enlarged spleen. The findings are given below:—

TABLE 4·7·5

Examination of children in regard to enlarged spleen

Name of the village	No. of children examined	No. of children with enlarged spleen
Pingeri (Kutia Kandha village)	.. 20	12
Jhalipada (S. C. Village)	.. 10	1
Belghar U. P. School (Oriya mixed)	.. 19	Nil

Three villages were taken as sample one from each category, a Kondh village, a Scheduled Caste (Panos) dominated village and one school where predominantly Oriya children read. It is clear that the tribals are exposed more to malaria than others.

All the 108 families opined that fever is the main cause of mortality and morbidity in the area. Hence control of malaria in the region requires top priority. It can be stated that fever may be due to other reasons, most common in the tribal region is due to respiratory tract infection including Bron-chitis pnumonia. Whatever may be the cause of fever as per guidelines of the Malaria Control Programme, all fever cases be given presumtive treatment of 4 tab. of chloroquine (each tab, containing 150 Mg. chloroquin base) to an adult and blood slides be taken for examination for malaria parasite before taking the drug chloroquine. If found positive, then radical treatment be instituted. Dose of the Drug, such as chloroquin and primaquin needs to be adjusted as per age and type of malaria parasite, children getting less of the drug. The percentage of malaria, out of the large number of fever cases as indicated in Table 4·7·4 could not be ascertained as in all fever cases blood slides are not taken and quite a large number of fever cases do not attend the hospital in person. Hence, it is imperative that active surveillance be energised in the field.

D. D. T., B. H. C. spray in the tribal area is of little value in Malaria Control Programme,

The other factor which can be considered is use of mosquito nets. This can be encouraged in the area through Health Education.

Antimalarial drugs are supplied by the primary health centre to the peripheral staff. As the area is inaccessible, drug distribution centres be started in all bigger villages and cluster headquarters for the smaller villages. All the schools, where a teacher is available can be declared as FTD or DDC depending on the willingness of the teacher. In FTD centres, the person in charge has to take blood slide. The practice can be attained within a day or two of training at the PHC.

Therefore, it is suggested—

Active and passive surveillance be activated. There are only 2 male multiple purpose workers to cover the area with 78 villages (68 Kutia Kandha villages and 10 Non-Kutia Kandha villages). It is not possible on the part of a worker to visit the allotted villages within a fortnight. Hence, number of sub-centre be increased to six that is four more additional sub-centres, to cover a population of one thousand and less. The norm fixed by Government of India for providing a sub-centre for 3,500 people in the tribal area be relaxed in the micro-project area. The additional expenditure for running the sub-centre may be borne by the micro-project authorities, establishment charges for running a sub-centre comes roughly to Rs. 36,000 per annum, four additional sub-centres, one in every year can be opened for the project area over a period of 2 to 3 years.

Skin diseases

TABLE 4·7·6

Skin diseases, the next common ailment in Belghar area

Year	Total O. P. D. cases	Skin diseases
1985-86 ..	15,789	2,744
1986-87 ..	17,164	3,375
1987-88 ..	18,068	3,758

About 20 per cent of population suffer from skin diseases like scabies, ringworm and other dermatological infections. Factors responsible for the malady are—

(*a*) Ignorance and illiteracy,

(*b*) lack of personal hygiene,

(*c*) congestion (overcrowding) 5 to 6 persons sleeping together in a small room.

This can be controlled—(*i*) by informing and educating the people through Health education, (*ii*) adequte provision of drugs for dermatological use including scabicidal and anti-fungal drugs. Out of 108 families contacted, 79 families reported skin diseases which is the next common ailment after fever.

Respiratory tract infection—It is a common cause of fever next to malaria in the area. Factors contributing for such disease are—

(*a*) extreme climate due to high altitude,

(*b*) exposure of body due to inadequate clothings, and

(*c*) poor nutritional intake of the children and very old people.

This has been dealt with under malaria in greater detail.

Diarrhoeal disorder—Evidence of cholera, gastroenterities are rare. 68 households stated that diarrhoeal disorders are the 2nd common ailment next to fever. Infantile diarrhoea leading to dehydration is very common among the infants (70—80% death is due to this disorder). It is preventable. Use of ORS be encourage. The mothers and grand mothers are to be trained in its use by holding discussion, group meeting etc. It is preferable to train them in their language.

Other diseases, though occur in tribal region, do not pose a problem and the health staff can tackle it without further help or additional funds.

Tuberculosis—Tuberculosis can be pulmonary or extra pulmonary. No survey has been conducted in the tribal area to know the exact magnitude of the problem. The only survey undertaken by I. C. M. R. during the period 1955—58 elsewhere in the country indicates that incidence of tuberculosis is 1·8% out of which 0·4% is sputum positive. Accordingly it is estimated that there are about 10 million tuberculosis patients in our country, of which 2·5 million are sputum positive and hence infectious. The prevalance is more in poor socio-economic condition coupled with illiteracy, overcrowding, poor sanitation and under nourishment. Hence though survey has not been done in the Kutia Kandha area it is estimated that there are minimum 90 cases of tuberculosis (5,000 population) of which 20 are sputum positive. A large number of potent antitubercular drugs are available and cure can reasonably be possible. Only thing is to identify the cases and put them on adequate and regular treatment. For this purpose National Tuberculosis Control Programme has been introduced since 1962. The District Tuberculosis Office, Phulbani can arrange camps for detection of T. B. cases with the help of the local health staff. Before the camp is conducted adequate publicity is necessary It is possible in the area without any additional expenditure. The requirement can be met out of the allotted funds to the District Tuberculosis Officer. The project can spend few hundred rupees for wide publicity in the area.

Leprosy—The Belghar area is not properly surveyed for identification of Leprosy cases, though a Leprosy Control Unit is functioning at Baliguda since long. Exact number of leprosy cases residing in the area is not known. Phulbani district has been undertaken for MDT, since 1988-89, but the progress of work is slow.

As the technical personnels are available, they need to be activated without any further expenditure. The normal staff and the additional staff suggested can help in the matter of eradication of Leprosy.

Drinking water—Provision of safe drinking water is considered as one of the most fundamental and basic human needs. Several schemes are in operation to cater to this need. The Government of India, State Government and some International Agencies and Non-Governmental Agency are providing funds for safe drinking water through tube-well. All these programmes have given special emphasis on the provision for supplying safe drinking water for the tribal people. Water-supply through pipes with constant chlorination is the best in the matter. Sometimes this method may get contaminated due to poor maintenance or when the pipe line are laid close to the sewarage. Of course such method of water-supply in the tribal region of Belghar area is impracticable due to the topographical condition. Water is needed for human consumption and for cattle. It is needed for bathing, cleaning clothes and other domestic chores. The normal sources of water are wells, ponds, rivers and stream. In the K. K. D. A. area several sanitary wells and tube-wells have been provided.

TABLE 4·7·7

Drinking water facilities in K. K. D. A. area water-supply in Tumudibandh Block

	Whole Block	Belghar G. P.	Gumma G. P.
Sanitary well	211	12	10
Chua	272	55	62
Tube-well	260	29	29
Tank	5	..	..

(*Source*—P. H. C., Tumudibandh)

Out of 6 sanitary wells of sample villages only one well is in use at village Dupi. None of the wells are really sanitary in nature. These wells need to be provided with a raised platform, drain and a hand pump fixed, so that tribal people can use them. Non of the villages have bucket or ropes to draw water from the well. Out of 6 tube-wells, 3 are not functioning due to some defect. While providing tube-well to a village some voluntary worker of the village may be trained who can attend to minor defects. Hence the only reliable source for drinking water at present is the hill stream, which is perennial. This water is often contaminated and can produce water borne diseases. Out of the 108 families interviewed, only 16 informed that they know by drinking contaminated water, they can have diseases like diarrhoea, dysentery etc., while 92 families are not aware about it. 58 families are using water from the tube-well and 40 families depend on stream water. Rest of the families depend on sanitary well, tube-well as provision for both sources are available in ths village. Although every village is to be provided with a tube-well, but it cannot be undertaken as rigs cannot ply to the village. In such cases, sanitary wells with hand pump fixed can be an alternative source.

Nutrition—Ragi gruel or rice is the stable food of the Kutia Kandhas As paddy growing land is limited, they utilise the 'Padar' land for growing cereals· 'Podu' cultivation is practised by each family to meet their annual requirement. Due to destruction of forests, various tubers and roots are becoming scarce. Calorie intake for adult male in Kutia Kandhas is adequate, though qualitatively it may be poor. However, 25 per cent of the children in Kutia Kandha families suffer from malnutrition or under-nourishment.

TABLE 4·7·8

Examination of children in regard to malnutrition

Name of village		No. of children examined	No. of cases of malnutrition
(1)		(2)	(3)
1. Pingeri (Kutia Kandha)	..	20	5
2. Jhalipada (Harijan)	..	10	Nil
3. Belghar U. P. School (Oriya)	..	19	Nil

Immunisation and maternal services—The Kutia Kandhas have a strong community feeling. They follow the old traditional customs and habits, though some change is noticeable among the younger generation. They also observe certain taboo during pregnancy, but it is changing now, as some Kandha women during pregnancy have been immunised by T. T. The antenatal, intranatal, post-natal visit by the female multipurpose workers need to be regular and intensive to change the attitude of the people. It is jeopardised because such posts remains vacant for a long time.

Phulbani district comes under universal immunisation programme. All the target children are to be immunised with proper vaccines to achieve the national goal of 85 per cent coverage by the end of the year 2000 A. D. So far our progress is not satisfactory. During the interview conducted by THRTI staff, it was found as follows:—

Total deliveries conducted	..	353
(*a*) Delivery at home by local ladies	..	342
(*b*) Hospital or Institutional	..	11
Women under pregnancy at time of the investigation	..	21

None of them had been immunised by T. T. This is due to ignorance of the people. The investigators asked few questions and obtained the answers as detailed below:—

(*a*) Certain disease can be prevented by immunisation

Yes — 19

No — 89

(*b*) If any child in the family immunised?

Yes — 37

No. — 71

(*c*) Will he/she co-operate with medical staff for the above purpose?

Yes — 98

Indifferent — 10

From the above, it is clear, that the old habits, customs and traditional way of thinking is gradually changing to adopt the modern day treatment. The lapses are due to ignorance and illiteracy. This can be overcome through Health education and general education.

TABLE 4·7·9

Births and deaths as recorded at Tumudibandh P. H. C.

Year	Birth — Block as a whole	Belghar G. P.	Gumma G. P.
1988	726	41	78
1989	665	44	83
1990	630	51	87

Year	Death — Block as a whole	Belghar G. P.	Gumma G. P.
1988	353	20	45
1989	353	14	41
1990	210	25	23

Year	0-1 year	1 to 2 years	3 to 5 years	5—15 years	15 year and above	Total
Agewise death for Belghar						
1988	2	1	1	1	15	20
1989	4	2	1	1	6	14
1990	4	3	2	1	15	25
Agewise death for Gumma						
1988	9	..	6	6	24	45
1989	13	3	3	1	21	41
1990	6	5	1	2	9	23

During the year 1989 in both the Grama Panchayats 17 infant deaths have occurred. An area having a population of 5,000 on an average, $30 \times 5 = 150$ birth have occurred. Hence the infant mortality rate in the K. K. D. A. area comes to 113. This seems low compared to all-India average. This is due to non-recording of all vital events. In the year 1982 IIPS undertook a survey in Phulbani district. This group recorded infant mortality rate as 168 for the Phulbani district.

Now let us consider about the Gumma G. P. alone. It is an inaccessible area with poor road communication. It has a population of 2,536 or say 2,500.

Average birth-rate in Orissa .. 30

Total birth in this G. P. $\frac{30 \times 2,500}{1000} = 75$

Infant died during 1989 as recorded by P.H.C. Tumudibandh is 13.

Hance the IMR $= \frac{13}{75} \times 1000 = 173{\cdot}0$

This gives a true picture of the Belghar area comparable to that found by IIPS in 1982. During the period the female multiple purpose worker was staying at Gumma Sub-Centre and as per opinion of several people of the locality, she was a good and sincere worker.

Health Education—In india, there are three district levels of life, (1) life of our agricultural workers and those of tribal areas which make up the bulk of our population, (2) the urban and peri-urban, poor and middle class, (3) the urban elite.

Formulation of plans and policies without due consideration to the typical socical structure would lead to unsuccessful implementation. The crux of the problem is how to reach the people to effect a wide spread social change. Social justice demands rational response from the receivers. A change in their attitude can be made slowly by sitting with them, listen to their deliberation, learn from their ideas and experience, discuss with them and use the technical knowledge in the last to get the Kandhas involved in the programme from the beginning. This approach is sustainable, long-lasting and can bear fruits.

Material and methods—

(*a*) Use of audio-visual aid-project of documentaries on Health

(*b*) Performing small drama in Kui language on various diseases and development programme.

(*c*) Composing songs in their language and making the boys and girls to learn it and sing them in social gatherings of Kandhas.

(*d*) Exhibition on health matters with the help of life, sized clay models during festivals. This approach has been very successful in the past in Puri district during Car Festival from 1981-82 to 1983-84.

(*e*) Organising training course for—

(*i*) Village elders—1 day

20 persons, daily expenses Rs. 10·00 for each person at the rate of Rs. 10·00 per individual comes to Rs. 200·00 per camp, 10 camps with the expenses of Rs. 2,000·00.

(*ii*) Mothers :

They can be trained on mothercraft, child care, use of ORS.

10 mothers .. One day

Expenses .. Rs. 100-00

10 such camps with an expenses of Rs. 1000·00

(*f*) Organising debate/essay competition in High School and M. E. School on matter of health like personal hygiene, malaria, skin disease, immunisation etc., prizes to be awarded.

Expenditure involved—

Non-recurring	..	Rs. 30,000·00
Recurring	..	Rs. 7,000·00

Suggestion with Financial involvement —

1. (*a*) 6-bedded Hospital at Belghar caters to the need of Belghar, Gumma Grama Panchayats. Hospital building complex along with staff quarters require major repeir and operation theatre is to be modernised. Approximate expenditure for the purpose—Rs. 1,00,000·00.

(*b*) Creation of new posts—

2 Staff Nurses	..	Rs. 36,000·00
1 Paediatric Specialist	..	Rs. 36,000·00
1 Female Sweeper	..	Rs. 15,000·00
Quarters for above staff	..	Rs. 4,00,000·00

(*c*) There are 2 Sub-Centres existing. It is inadequate to meet to need of the people. Additional 4 male multipurpose workers and 4 female multipurpose workers are required—Rs. 1,44,000·00.

(*d*) Construction of low cost house for above at the rate of Rs. 50,000·00 per quarters—Rs. 4,00,000·00.

2·1. *Control of Malaria*—

(*a*) Active and passive surveilance to be activated

(*b*) In each village, where a school exists the teacher is to be requested to start D. D. C. or F. I. D.

(*c*) All Anganwadi workers to start the D. D. C.

(*d*) Use of mosquito net be encouraged through Health Education.

(*e*) The Medical Officer, Tumudibandh P.H.C. must make adequate arrangements to supply chloroquin tablets to each D.D.C.

(*f*) The people are to be educated about the diseases, how it is caused and transmitted and why chloroquin tablets is given to all fever cases, to prevent future misunderstanding.

2·2. *Control of skin diseases*—Possible through educating the people on personal hygiene, cleanliness, etc.

2·3. *The infant mortality rate is*—

(*a*) high which comes to 173·0 in Gumma G. P. The same high rate is also expected in Belghar G. P. The main cause of death are feaver and infantile diarrhoea. To effectively reduce it, the Health Workers be provided with oral antibiotics-Pencillin tab and liquid preparation of long acting sulpha as a special measure, considering the peculiar topography and condition of the people. As funds for the purpose may not be available from the health budget, the project can provide the above estimatad cost—Rs. 5,000·00.

(*b*) Use of ORS be encouraged to prevent death from dehydration. For the purpose, the mothers need to be trained. The mothers can be trained in batches in their village or cluster of villages, 10 mothers at a time and 10 camps per year. Requirement of funds Rs. 1,000·00 per year.

2·4. The District Tuberculosis Officer, Phulbani be asked to conduct T. B. detection camps once every 2 months in rotation basis in the area to identify active or sputum positive cases and initiate adequate and regular treatment. No additional funds are required. If necessary, the project can bear the cost of P. O. L. which comes to about Rs. 500 per camp. 6 such camps in a year—Rs. 3,000·00.

2·5. The district of Phulbani has come under Multidrug therapy of Leprosy. The District Leprosy Officer may be asked to conduct the survey to find out the leprosy cases requiring treatment.. The tribals in general have different ideas about the disease. Intensive health education is necessary to change their attitude. This can be done through projecting documentaries on leprosy. Pamphlets, posters, etc. are not necessary, as the literacy rate is very low.

3. The district comes under Universal Immunisation Programme. Required vaccines are supplied free by Government of India. The limited people have accepted immunisation. The health workers both males and females along with Anganwadi workers must conduct immunisation camps. Initial resistance can be overcome through discussion among in the community members as suggested in Health Education. The additional staff suggested may be result oriented but not merely employment oriented. The male and female health workers have a special responsiblity. All the staff posted in this area may be given a training at Tribal and Harijan Research-*cum*-Training Institute, Bhubaneswar for a period of 2 to 3 days to acquaint themselves with the tribal custom, habits, mode of living, etc.

4. Nutritional standard cannot be raised unless pulses and vegetables are grown in their field. The agriculture Department has to create favourable response in this regard.

5. The wells are not utilised for drinking water purpose. Such wells require to be sanitary wells in true sense and hand pumps are to be fixed.

6. On health education, the matter has been dealt widely. The beneficiary is the Kutia Kandha among whom literacy is very low. The only way to educate them is through audio-visual aids and any amount required is worth spending.

Financial Involvements—

			Rs. in lakhs
1st year	(*i*) Health Education material	..	37,000·00
	(*ii*) Creation of 2 posts of Staff Nurse	..	36,000·00
	(*iii*) Creation of 1 post of Female Sweeper	..	1,500·00
	(*iv*) T. B. Camp for P. O. L.	..	6,000·00
	(*v*) Mother's Training Camp	..	1,000·00
	(*vi*) Special repair to Belghar Hospital	..	1,00,000·00
	Total	..	1,81,500·00
2nd year	(*i*) Construction of Staff Qrs. for additional staff 50 per cent		2,00,000·00
	(*ii*) Creation of post of Paediatric Specialist	..	36,000·00
	(*iii*) Creation of 2 male and 2 female Health Workers post	..	36,000·00
	(*iv*) T. B. Camp, Mother Training Camp, etc. to continue and other schemes of 1st year to continue.		55,000·00
	Total	..	3,27,000·00

			Rs. in lakhs
3rd year	(*i*)	Completion of rest 50 per cent of additional staff quarters	2,00,000·00
	(*ii*)	Creation of 2 posts of male and female health worker each	36,000·00
	(*iii*)	Construction of low cost houses for the male and female additional health workers.	4,00,000·00
	(*iv*)	Continuance of previous year scheme ..	1,27,000·00
		Total ..	7,63,000·00
4th year	(*i*)	Completion of all construction work ..	1,00,000·00
	(*ii*)	Sub-centre building at Belghar, if Health Department do not provide the same.	1,00,000·00
	(*iii*)	Others to continue ..	1,27,000·00
		Total ..	3,27,000·00
		Grand Total ..	15,98,500·00

4·8. *Public Health and Sanitation*

Always the proverb holds good to every time that "prevention is better than cure". If we go back to 400 years, we can find all the western countries, specially the England who was governing 3/4 of the world was no better than any other developing country like Africa or 30 years back India. At that time the people of England considered it prudent to adopt the preventive side of health than to spend much on curative side. Unless the preventive side is taken well care of, curative has got no meaning.

Hence they took care of supplying portable water. The people were given health education. The environments of the place where there is settlement were kept neat and clean by providing proper sewarage and drainage. As a result of which all the communicable diseases and gastroenteritis diseases were checked to a great degree. Now in India the picture of rural people's health is no better. Only in some towns of India there is water-supply provision and people have their individual sanitary latrine, Sewarage system only to 30 per cent of towns has been provided.

The idea of providing portable water-supply to village folks came only after the decision taken by W. H. O. during 1979 and all over, the developing countries started taking action with this programme and observed 1981—1990 as "water-supply and sanitation decade". In this programme as it envisages that all the rural area will be covered with 100 per cent portable water-supply and 25 per cent of village population will be covered with sanitation programme. This programme has definitely gathered momentum during all these years. The Government of Orissa with its M. N. P. Programme along with accelerated water-supply programme covered all the identified problem villages.

Even then many villages so far have been left out to be covered with the above programme. There are many reasons to this. Mostly this due to inaccessibility. Due to approaching difficulties to these villages mostly the rig is not able to go and to drill tube-wells.

Mostly the water in certain areas like in the areas of Koraput and Phulbani, water bearing strata are not available. Required amount of water is not available in the tube-well due to difficult geohydrological conditions. Here in this area the Kutia settlements are very small in sizes consisting of 5 households to 25 households as a result, it is difficult to plan out for provision of common facilities like pipe water-supply. Here, however, we may provide two model water-supply system in the headquarters of two Grama Panchayats.

1. In Belghar, villages in and around Belghar
2. In Gumma, villages in and around Gumma

Even through these two villages along with other cluster villages do not confirm to the parameter of pipe water-supply project, we may take these two places as model ones for this area, because, from this place people of other areas will get the ideas of water-supply facilities and try to learn sanitation. Now we may consider that by this pipe water-supply scheme 3,000 people will be considered and the balance 4,244 persons of the area will be covered by tube-well programme. Assuming about 10 villages will be covered by pipe water-supply, the balance 58 villages will require tube-well programme, Out of this 28 villages with less than 100 population justify for one tube-well each. Then the villages which will have more than 100 population, we may provide two nos. of tube-wells to each such village for the reason if the only tube-well goes out of order the people will switch over to their old practice and use stream and nallah water. Number of such villages will be 25.

Hence, total No. of T/Ws—50+28=78 Nos. Already there are 58 Nos. of tube-wells in the villages as found out in the list as enumbered.

78—58-20 Nos.

Extra 10%=20+2=22 Nos. Thus, 22 numbers of near tube-wells are to be constructed.

TABLE 4·8·1

List of tube-wells existing in the Kutia Kandha villages

Sl. No.	Name of the village	No. of T./W.	Existing condition
(1)	(2)	(3)	(4)
1	Ushabali ..	1	Running
2	Pikusi ..	1	Running
3	Sinogucha ...	1	Running
4	Guchuka ..	1	Running
5	Tidipadar ...	1	Running
6	Deogada ...	1	Running
7	Kadapara ...	1	Running
8	Belghar ...	8	Running
9	Jhalpada ...	1	Running
10	Rangaparu ..	2	One defunct and one running
11	Kusumunda ..	1	Running
12	Saperi ..	1	Defunct
13	Gombhari ..	1	Running
14	Dupi ..	1	Running
15	Gumma ..	3	Running
16	Puhuru ..	1	Running

Sl. No.	Name of the village	No. of T./W.	Existing condition
(1)	(2)	(3)	(4)
17	Kolanguda	.. 1	Defunct
18	Pedam	.. 1	Running
19	Nuamunda	.. 1	Running
20	Susabhata	.. 1	Running
21	Paghipadi	.. 1	Running
22	Burlubaru	.. 1	Running
23	Paikapada	.. 1	Running
24	Rajam	.. 2	One defunct and one running
25	Garang	.. 1	Running
26	Kadapanga	.. 1	Running
27	Dhudusi	.. 2	Running
28	Sopenbhata	.. 1	Running
29	Dhumamaska	.. 1	Defunct
30	Mandimaska	.. 1	Defunct
31	Karlangi	.. 1	Running
32	Dharanimaska	.. 1	Running
33	Goibali	.. 1	Running
34	Silikudi	.. 1	Running
35	Paskodi	.. 1	Running
36	Bikapanaga	.. 1	Running
37	Masanipada	.. 2	Running
38	Kanibaru	.. 1	Running
39	Tuakola	.. 1	Running
40	Bhaluguda	.. 1	Running
41	Sundhibali	.. 1	Running
42	Panmala	.. 1	Running
43	Bhandaisal	.. 1	Running
44	Golampanga	.. 1	Running
45	Mahabali	.. 1	Running
	Total	.. 58 Nos.	Defunct—6 Nos.

From the above it was revealed that P. H. E. organisation is taking immediate action in repairing the tube-wells which are found defective. During the stay in the Girls' Hostel of the Tribal High School, Belghar it was noticed that the water of tube-well was not of good taste. There was also general complain in this area that water of the tube-well is not tasteful and giving smell. The regular physical and chemical test of water of tube-wells may be conducted and action can be taken by P. H. E. Department, if there is any defect in quality of water. It is observed that the K. K. D. A. has not spent any money for water-supply programme. And all these tube-well programmes have been done by the State Government from their own resources.

The funds required for water-supply and sanitation is as follows:—

(1) Construction of 22 Nos. of new tube-wells @ Rs. 50,000 T/W.	Rs.	11,00,000·00
(2) Replacement of defunct T/Ws. 7 Nos. @ Rs. 5,000·00 ..	Rs.	35,000·00
(3) 2 Nos. S. G. Pipe water-supply @ 800—capital for prospective population of 2,021—4,320.	Rs.	34,00,000·00
Total ..	Rs.	48,50,000·00

Say 50,00,000 (Fifty lakhs)

Personal hygiene of Kutia Kandha—The Kutia males and females lack knowledge of personal hygiene. They do not take regular bath nor wash their mouth properly after food. After defecation they do not clean their anus properly. Their houses are devoid of ventilation facilities. They use water from the same stream where their cattles also take bath and they use this water for drinking and cooking as a result the Kutia suffers from gastroentersis diseases, skin diseases, leprosy, bronchitis and T. B. etc. Hence the Kutia are to be given personal health care training through Videc film so that such diseases will be reduced in this area.

Sanitary Latrines—Under Government of India scheme Sulav type latrines are envisaged to be provided to S. T. and S. C. areas and under this programme 95 per cent cost is borne by Government of India and State Government. The balance 5 per cent may be borne by K. K. D. A. and with this principle all the families of Kutia Kandha area will be provided with such water seal latrine. The design and its drawing are available with C. E. (P. H.) Office, Government of Orissa. The cost of such latrines will be about Rs. 2,000 (average) and there are 1,766 Nos. of families including non-Kutia (S. C.). Hence each family may be provided with one such latrine.

Total cost involved will be 1,766×2,000=Rs. 35,320·00 or say Rs. 36,000·00. Hence total expenditure on W/S and sanitation programmes will be Rs. 50,000·00+Rs. 36,00,000 =Rs.86,00,000.

Now spliting the programme over four years.

Sl. No.	Work programme/ Manpowar Created		1991-92	1992-93	1993-94	1994-95
1	Work programme	..	16,00,000	25,00,000	25,00,000	20,00,000
2	Mandays created	..	8,000	12,000	12,500	10,000

Broad suggestions those appeared under communication hold good for water-supply and sanitation programmes excepting provision of engineering personnel.

Engineering personnel in the sector—The P. H. organisation may post one Assistant Engineer with necessary Junior Engineer to take up this programme. His headquarters will be at Belghar and the Assistant Engineer should take all the care of the work and guard the specification and quality of work and complete it within the time frame.

Electrification sector—Total expenditure that may be involved

(*a*) drawing Electric line and errection of poles (P.S.L.)for	...	40 Kms.
(*b*) Installation of transformer	...	160,00,000

To take up this programme one Assistant Engineer with necessary Junior Engineer may be posted at Belghar to take up this programme and complete the same within the time frame of 1991 to 1995. This expenditure may be borne by the O. S. E. B. from their annual budget.

4·9. COMMUNICATION

Communication is a vital link between development and transmission of ideas. Education and communication are two sister-catalysers of any development programme. If communication is in hardware side, then education is in the software. Total development cannot be contemplated in the absence of these two aspects. Without communication link, trade, marketing, transportation facilities. maintenance of law and order, providing health services in the intetior areas are not possible,

TABLE 4·9·1.

Present status of communication facilities in Kutia Kandha area

Sl. No.	Name of the road and its distance in Km.	Type of road	Present position	Remarks
(1)	(2)	(3)	(4)	(5)
1	Road to Ushabali	1 Km.	All weather	Metalled Constructed wh I. T. D. A. fund.
2	P. W. D. road to Pikusi and Tarlangi.	3½ Kms.	Ditto	Do. Ditto
3	P. W. D. road to Gumma	5 Kms.	Ditto	Do. Constructed with Block fund.
4	Gumma to Kalamguda (Panchayat road).	2 Kms.	Fair-weather	Earthen Ditto
5	Gumma to Pedam (Panchayat road).	3 Kms.	Do.	Do. K. K. D. A.
6	Gumma to Pingal (Panchayat road).	3 Kms.	Do.	Do. Block
7	Gumma to Nuamunda (Panchayat road).	3 Kms.	Do.	Do. Block fund
8	Gumma to Kranja (Panchayat road).	3 Kms.	Do.	Do. K. K. D. A.
9	P. W. D. road Deogarh	½ Km.	All weather	Metalled Block
10	P. W. D. road Guthunu	½ Km.	Ditto	Do. Block
11	P. W. D. road Tidipadar	½ Km.	Ditto	Do. Block
12	P. W. D. road Gumma	14 Kms.	..	.. Block
13	Panchayat road to Gambhari.	2 Kms.	..	.. Block
14	Panchayat road Belghar to Rangaparu.	4 Kms.	..	.. Block
15	Panchayat road Rangaparu to Betipada.	5 Kms.	..	.. K. K. D. A.
16	Panchayat road Serdangi to Adalngu, Targabali, Batipada.	8 Kms.	..	.. I. T. D. A. and K. K. D. A.

Sl. No.	Name of the road and its distance in Km.	Type of road	Present position	Remarks
(1)	(2)	(3)	(4)	(5)
17	Panchayat road to Tuskala	1¾ Kms.	..	..	Block
18	P. W. D. road Kadapana to Rangaparu.	5 Kms.	..	..	K. K. D. A.
19	P. W. D. road to Burlubaru	¼ Km.	..	..	Block
20	P. W. D. road to Rajam	2 Kms.	..	..	K. K. D. A.
21	P. W. D. road to Kranjikana	5 Kms.	..	..	I. T. D. A.
22	P. W. D. road to Dhudusi	3 Kms.	..	..	Block
23	Panchayat road to Sapanbhata and Naskasaru.	6 Kms.	..	..	I. T. D. A.
24	P. W. D. road Gorang	3 Kms.	..	..	I. T. D. A.
25	P. W. D. road to Dhumamaska.	1 Km.	..	..	K. K. D. A.
26	P. W. D. road to Knrlangi	1 Km.	..	..	K. K. D. A.
27	P. W. D. road to Mundimaska.	3 Kms.	..	..	Block
28	Panchayat road Dhubasi to Golampanga, Pairmala, Sindhibali, Lindrangi and Bhalugudi.	15 Kms.	Fair-weather	Earthen	K. K. D. A.
29	Panchyat road Saperi to Radang.	6 Kms.	Do.	Do.	Block
30	Sushabhata to Salpati	3 Kms.	Do.	Do.	I. T. D. A.
31	Belghar to Pandaslaski	1½ Kms.	Do.	Do.	Block
	Total ..	110·75 Kms.			

Out of 111 Km. of roads as exist, 51 kms. constructed by Project Division under N. H. confirm to some kind of road specification but the balance 60 Kms. are earthen road where only the road formation has been made and this is the earthen road usable only during fair-weather. Near about 20 villages have got no communication facilities.

The 14 kms. road conecting Tumudibandh to Belghar is a ghat road. This road belongs to R. & B. and it also connects to Ambadola. Out of the total road only, one link road from Tumudibandh has been taken up. From this 14 kms. road, only 8 kms. have been black topped and the balance work during the period of inspection was under progress.

here were inadequate data as regards the villages to where there is no road connection. In absence of such data here it is assumed that there will be at least 30 kms. of new road that will be required to connect these villages to the road that will lead to Belghar which is the centre of all kinds of activities of the development programmes.

In absence of the detailed estimated, a rough estimate is made only to assess the probable cost involved in the project.

1. New road construction with specification of C.V.R. and Black topping with necessary cross drainage @ 4,00,000/Km.
2. To bring all the earthen road to the standard of C.V.R. and black topped and provide cross drainage @ 3,00,000/Km.
3. To bring all the metal roads black topped and provision of cross drainage @/1,00,000/Km.
4. Providing roads inside the village for 68 villages

Sl. No.	Roads	Kms.	Unit rate for construction	Rough estimate	Total	Remarks
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	New road	.. 20	4,00,000	80,00,000	330,00,000	
2	Earthen road	.. 62	3,00,000	186,00,000		
3	Metalled road	.. 51	1,00,000	61,00,000		
4	Inside village road	.. 10	30,000	3,00,000		

Now let us look at the expenditure that has been incurred in this sector during these last 13 years by K.K.D.A. and other agencies, like ITDA and Block programme. In absence of yearwise data and information from I.T.D.As. and Block some appropriate assumption has been made.

Sl. No.	Name of Agencies, provided fund	Kms. of road executed	P.W.D.	Panchayat	Cost
(1)	(2)	(3)	(4)	(5)	(6)
1	K.K.D.A. ..	41	P. W. D.	Panchayat	Rs. 4,80,000
2	I.T.D.A. ..	25·5	..	Panchayat	Rs. 2,60,000
3	Block ..	46·5	..	Panchayat	Rs. 4,70,000

Total expenditure on this sector from the year 1978 onwards is Rs. 12,10,000 (Twelve lakh ten thousand) and the yearwise expenditure comes to abcut a lakh.

From the above it can be visualised that the expenditure over 13 years in this sector is vary meagare and with rhis trend of investment it is not possible to attend the target in the time frame of 4 years programme that is 1991—1995, Hence it is required to distribute the outlay over four years as detailed below :—

Programme for communication

Sl. No.	Financial outlay	1991-92	1992-93	1993-94	1994-95
1	Financial outlay ..	50,00,000	100,00,000	100,00,000	60,00,000
2	Mandays created ..	30,000	50,000	50,000	30,000

Suggestion—The concept of Micro-Project in this area may not fit so far as engineering works are concerned. All the gigantic nature of work cannot be handled by the Special Officer, K.K.D.A., So also such huge amount of fonds may not be possible to flow from H. & T.W. Department. The respective departments should come forward to take up such load. The the R.D Department has already been created by the Government to handle such works in the rural area So far, all these areas have been sufficiently neglected. Time has come to take care of this place and persons. The road work should not be left to Panchayat to handle since they don't have the necessary technical personnel.

Technical personnel—To implement the programme as mentioned, one post of Executive Engineer under R. D. Department may be created with 2 numbers of A. E. with their headquarters at Tumudibandh and Belghar respectively to fulfil the target within the time frame.

All these works may be monitored by the Special Officer, K. K. D. A. keeping close contact with the Executive Engineer and Assistant Engineer and fix up priority of road programme in the area.

It is heartening to note that one bus is plying from Baliguda to Belghar through Tumudibandh once in a day and it caters to the needs of the people of the area to certain extent.

After the programme as earmarked is achieved, there will be all weather communication to this area. Trade, business, marketing of goods either agricltural or product from village industries will find good market.

4·10. EDUCATION :

Education is one of the basic needs of man. It has been instrumental to the transformation of the savage man of the yore to his civilized form of today. A process of refinement of the internal nature of man and his external social behaviour is set in by education through gradual modification of his conduct. Education makes man rational and free of superstitions. Advancement of a community largely depends upon the quality and nature of education imparted to its members. Education adds colour and brightness to human culture.

Education is an indispensable ingredient for economic development of the society. It enables man to acquire more power and capability to utilize the economic factors in the direction of better productivity. He discovers new ways and means to fulfil his needs by maneuvering his environment. He learns new technology to earn a better living for himself, his family and his community as a whole.

The role of education cannot be over-emphasized in the life of tribals. They hail from a society which is at the base level of development. Their society is extremely simple. Their needs are few. They have a cultural and physical isolation due to communication gap. Their understanding of the developmental schemes and programmes is the key to their upliftment.

The tribal people are governed by ora l tradition interpreted by the village elders and leaders of the social organisations. The process of change though slow, is entering into their community through their contact with non-tribal population and the develop-mental forces are inducted in gradual degrees, Written messages are going to be the medium of communication in the developmental process. The tribal community as a whole must be given the necessary inputs to understand the transactions which they will have to enter in a new context where the oral word is losing its value and the written word is acquiring exclusive authencity.

A World Bank Study (1980) elucidating the importance of primary education reports, "primary education has been found to be positively related with agricultural extension and productivity on the farm". This conclusion was arrived at after extensive studies in different countries those which have universalized piimary education

and those which have not. The study has rightly pointed out that agricultural extension services become effective when members of a community have developed their receptivity at least through primary education (Primary education here means education upto Class-VIII standard). Understanding of the methods of increased prodution is better with those having Primary education background than with non-literates. Governments of different countries have evinced keen interests in the programme of universalisation of primary education after publication of the aforesaid World Bank report

There cannot be any doubt about education regulating not only the agricultural production but also the quality of development in all sectors. In this context the educational development of Kutia Kandha Development Agency, Belghar may be analysed.

The Kutia Kandha have been identified as a primitive tribe in consideration of their low level of literacy, Pre-agricultural level of technology, the secluded and archaic mode of life and the distance of their location from the main arteries of travel. Their development was delayed and neglected till the micro-project was set up for them.

The Kutia Kandha villages are too small having inadequate population for opening of schools. No school can be viable in the small Kutia Kandha villages.

Almost every Kutia Kandha village, unless it is too small, has a *Dhangidisala* (dormitory for youny maidens), which is smaller in size than the normal households. This is the only common house available in the village which is sometimes used to entertain either the guests of the village or the guests of a person for a temporary period—say for a day or two. It is ordinarily located at the end of the village. Musical instruments are kept in the Dhangidisala. Dance and music performances are held every evening which are participated by the youngmen and women of the village. Occasionally the youngmen of othet villages come in groups to dance with the young girls of the villages.

It is generally hoped that the Dhangidisala being a common house of the village could be utilized for adult education or non-formal education purposes. But no instance could be made available in favour of such utilization of the Dhangidisalas. It is worth considering that the type of activities that go on in the Dhangidisalas are not at all conducive to any educational purpose. The youngmen and women would never spare this house for any other purpose unless they are forced to do so. Ordinarily they would object to the idea of utilising their dormitory for other purposes than dance and music.

Adult Education—Currently no adult education programme is in operation in the Kutia Kandha Development. Agency, Belghar. On enquiry it was learnt that Tumudibandh Block was brought under the adult education programme for one term of ten months duration in the past and being a part of Tumudibandh Block a few villages of Kutia Kandha Development Agency were included in the programme and thereafter the programme was discontinued. Experiences in adult education have proved that piecemeal approaches have miserably failed for the following reasons :—

1. There is no continuity of the education programme, as a result a portion of the area is made partially literate whereas the remaining portion continues to have illiterates.
2. Post literacy programme and follow-up action for the neo-literates lack and consequently the neo-literates lapse into illiteracy.
3. There are enough opportunities for fake enrolment when the next term is availed of possibly a large portion of those who were made literate but would have lapsed into illiteracy would be enrolled once more.

Area-specific intensive operations in adult education has been the most recent approach with follow-up programmes for the neo-literates which is being discussed in the action plan.

Prioritisation in adult education—In a monograph styled as "Special Problems of Adult Education for Tribal Areas' published by Government of India (1978) it had been clearly indicated that tribal areas should be given top-most priority in adult education irrespective of the financial constraints. The following statement may be quoted :—

> "It is clear that tribal areas stand out as the highest priority areas in the programme of adult education. In view of the crucial role of adult education in a delicate phase of the history of tribal communities, financial resources could not be considered as a serious constraint. However, the very special character of the tribal situation imposes certain other severe constraints like preparation of suitable programmes for each region, drafting of dedicated personnel with vision to implement the scheme, reorientation of teachers, etc.".

No efforts have yet been made to introduce area-specific programmes in adult education, particularly local-specific bilingual primers have not been introduced, no motivation method has yet been utilized, and no aids could be developed which are within the recognition range of the adult illiterates.

Two important considerations should have been made in respect of introduction of a special programme particularly designed for the Kutia Kandha (1) Kutia Kandha is a primitive tribe and (2) Adult aducation holds key to the task of tribal development.

(1) One of the bases for deciding the Kutia Kandha to be a primitive tribe is that it had a literacy below 5 per cent of its population. In 1980, it was estimated that the literacy position was 2·9 per cent. Hence, there can be no doubt that literacy percentage among the Kutia Kandha was still less when it was identified in 1960 as one of the primitive tribes and as such it deserved immediate attention for introduction of a long operative special programme in adult education.

(2) Researches have proved that education is positively correlated with agricultural productivity. The adult population is directly shaping the production process. Therefore they are to be prepared to face the challenges of today and tomorrow. The children of today will be in commanding position only day after tomorrow. While efforts of formal education for the children's group will be necessary for laying a sound foundation for future a massive and effective educational programme addressed to the adult population can help the tribal communities to scale over the problems of today.

Literacy position—As has been said earlier no adult educaton programme is in operation at present in Belghar Project. The programme that was launched in the past was introduced in a few villages for ten months only. It did not generate any perceivable result in the literacy position among the Kutia Kandhas whatever improvement is now seen in the literacy position is the cumulative effect of the formal and non-formal education,

Percentage of literacy to the total population of an area is an exact index of the outcome of the entire educative process—formal, non-formal and adult education. Education of all types at all stages contribute to the improvement of literacy of any given community or area.

The Kutia Kandha Development Agency, Belghar collected statistics on adult education in the year 1990. As per their report the percentage of literacy among the Kutia Kandhas of Belghar project was 11 in 1990.

Data on literacy were collected in the last Census of 1991, but the tabulated results in respect of the Kutia Kandha Development Agency have not been made available. However, Census data in respect of Belghar Police-station are available which are analysed in the following paragraph.

The total population of Belghar Police-station is 14,496, Male—7,247 and female—7,249. Total literates of the Police-station are 1,827 of which 1,586 are male and 241 are females. Total literacy position is 1,827/14,496=12·6 per cent. Literacy among males—1,586/7,247=21·88 per cent. Literacy among females—1,241/7,249=3·32 per cent.

The population of Kutia Kandha Development Agency being 7,475 is almost 50 per cent of the population of Belghar Police-station and the composition of population of Kutia Kandha Development Agency being almost the same as that of Belghar police-station, the percentage of literacy will remain around the literacy position of Belghar Police station. It may be assumed that literacy among the males of Kutia Kandha Development Agency will be around 20 per cent and among females 3 per cent average being around 12 per cent.

The above analysis indicates lack of advancament of education in the Kutia Kandha Development Agency. It has a literacy of 12 per cent against the State average of 41 per cent. Similarly it has 20 per cent literacy among males and 3 per cent among females amongst the corresponding State literacy of 52·51 and 29·1 per cent, respectively. Since there has been a total neglect of adult education, particularly in case of women, adequate emphasis should be laid on motivation of women and special programmes may be developed for women folk for quicker achievement.

Pre-primary Education—Almost all the parents of Kutia Kandha children did never have schooling. It is very natural that they would not feel the necessity of education in the life of their children. They are used to engage their children for collecting Mohua flower or other forest products or ask them to perform the work of baby sitting when both the parents are out for work in the field or forest. It is a fact that 95 per cent of the Kutia Kandha are poor and need the assistance of children in their economic endeavours, so that they could earn a bare substistence for the family. They would not be motivated to send their children to schools if there is not provision for feeding children. Naturally, any programme having a provision for feeding would attract tribal parents.

It is necessary for the tribal children to be oriented in school-going practices before they are actually required to attend schools. The curricular load on the tribal children immediately after attending school would frighten them and they might run away from schools unless they are given an orientation in attending schools and doing some curricular work.

A gradual process of leading the children to the school system is necessary in the project area. The school readiness programme with the following components is consider relevant to the tribal situations:

School readiness programmes—

(*i*) Play with and without toys

(*ii*) Dancing and acting with action songs

(*iii*) Seeing still and action pictures

(*iv*) Physical discipline like going in a line. performing simple drills

(*v*) Story-telling within the comprehension range of children

It is expected that pre-primary education with the above programmes would be attractive and sustaining. But a feeding progromme has to be along with the pre-primary education programme. The parents are more interested to see that their children get good food in pre-school centre does not matter whatever programme or education is given to them.

Anganwadis run by the Community Development Department of Government in the Kutia Kandha Development Agency combine the feeding programme along-with the pre-primary education components. In addition to the above two these centres adopt a package programme of four more components, namely.—

(*a*) Immunisation

(*b*) Health check up

(*c*) Referral services

(*d*) Health and nutrition education

There are nine Anganwadi Centres in Kutia Kandha Development Agency which run a package of programme of six items mentioned in the foregoing paragraph.

The Centres are—

1. Guma
2. Belghar
3. Dupi
4. Pageripada
5. Bilamal
6. Dhudusi
7. Rangaparu
8. Kanibaru
9. Lidranga

Besides these Anganwadi Centres, twelve Anganwadi Sub-Centres are also run by the Community Development Department with emphasis on feeding 5-6 year old children and pregnant and lactating mothers and immunisation.

Names of the Sub-Centres are—

1. Burlubaru
2. Jhalipada
3. Deogada
4. Khandapanga
5. Batipada
6. Bikapanga

7. Kuchamunda
8. Guma-Harijan Sahi
9. Nuamunda
10. Ushabali
11. Sushabhata
12. Guchhaguda

The Anganwadi Programme gives a good coverage by extending the scheme to 21 villages out of 80 constituting 26·25 per cent. There are 30 villages with population less than 50. As per 1981 Census data, the child population in the age-group of 4 to 6 is 4·72 per cent. Hence, in a village with a population of 50 at best 3 children would be available. It may not be possible to run an Anganwadi Centre with 3 children. But some compensatory pre-school programme should be arranged for these children in order to facilitate their primary education.

Seva Bharati—A pre-primary institution was running in Jhalipada Harijan Sahi under the name of "Seva Bharati". It provided excellent compensatory pre-primary education to the children and prepared them for primary education. The difference between Anganwadi and Seva Bharati is that Anganwadis provide a package of services including feeding of pregnant, and lactating mothers along with children in the age-group of 3 to 6 whereas the "Seva Bharati" concentrates more on the education component of children. It is suggested that the Anganwadis should adopt the Seva Bharati programme of pre-primary education and combine the same along with other programmes. It may not be possible to establish a net work of "Seva Bharati" institutions due to financial constraints.

Elementary Education—It has been pledged in Article 45 of the constitution of India under the directive principles that elementary education for children in the age-group of 6 to 14 years should be universalized within ten years of the commencement of the Constitution in 1950. Universalization of elementary education has three district phases, namely — (1) Universal provision of educational facilities, (2) Universal enrolement and retention and (3) Universal participation and attainment.

On review of the situation of Kutia Kandha project area it is found that the first step of universalization programme has not been completed. Schooling facilities have not been provided to the children of all the 78 inhabited villages. As per State Government norms primary schools are to be provided for a population of 200 in the tribal areas within one kilometre distance from the home of each child. These two norms of population and distance cannot be satisfied in the tribal areas, particularly in the Kutia Kandha areas for the simple reason that Kutia Kandha villages are too small, sometimes having a population of 7 or 8 and are located at long distance, from each other, so much so, that clustering of habitations for establishment of primary schools is not possible. Therefore, the villages where primary schools have not been opened remain unserved.

A statement of primary schools and primary stages of education attached to M. E. or High Schools is given hereunder for a detailed treatment.

TABLE 4·10·1

List of primary schools/stages in Kutia Kandha Development Agency

Name of school	No. of rooms			No. of teachers		Total No. of students
	Pucca	Kutcha	No. of building	Sanctioned	Working	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. Belghar U. P. School ..	2	..	...	3	3	56
2. Bilamal U. P. School ...	1	...	...	2	2	49
3. Batipada L. P. School	..	...	..	1	1	17
4. Burlubaru L. P. School	2	..	...	1	1	31
5. Bikapanga L. P. School	2	...	...	1	1	21
6. Deogada L. P. School	1	..	..	1	1	14
7. Dupi L. P. School ...	2	..	..	1	1	22
8. Dharanimaska L. P. School.	..	...	..	1	...	11
9. Germal L. P. School	..	..	..	1	1	30
10. Garang L. P. School	1	...	..	1	1	28
11. Gurlimaska L. P. Schoo	..	...	..	1	1	18
12. Khadpanga L. P. School	2	..	..	1	1	32
13. Kineri L. P. School ...	...	..	..	1	1	19
14. Guchuka U. P. School	2	..	..	2	1	26
15. Pikushi L. P. School	..	..	..	1	...	11
16. Pukuru L. P. School ..	1	..	..	1	1	18
17. Rangaparu L. P. School	..	..	...	1	...	12
18. Randang U. P. School	2	...	..	2	2	37
19. Sushabhata L. P. School	1	..	...	1	1	32
20. Dhudusi U. G. M. E. School.	2	...	...	3	2	60
21. Guma Ashram School	4	..	..	4	4	108
22. Belghar Residential Sevashram.	4	...	..	4	4	140

School Building—It may be seen from table 4·10·1 that 7 Primary Schools do not have buildings of their own. The activities and academic programme of schools without building cannot be regulated. In the non-tribal areas the villagers arranged either a community house or a private house for holding the school. But such facilities are not available in Kutia Kandha villages. Of course there are Dhangadisala in bigger villages (dormitory for the maidens) which are commonly owned by the villagers. But the dormitory is used to store the musical instruments and stock of food grains collected for entertainment of guests. The dormitory is occasionally spared for a day or two for guest but the young boys and girls would not spare the house for long which would cause discontinuance of their music and dance programmes. Preference is always given to the youth activities with dance and music to any other programme.

Residential accommodation of the teacher is another problem. If there is a school building the teacher might use the building both for his residential accommodation and also for the school. Teacher absenteism and teacher irregularity in the tribal areas are mainly due to non-provision of buildings for the schools.

It is learnt from the office of the Director, Elemetary Education, Orissa that building grants were sanctioned in favour of the following 4 Primary Schools at the rate of Rs. 20,998 each during the year 1984-85.

1. Batipada L. P. School
2. Dharanimaska L. P. Schooi
3. Rangaparu L. P. School
4. Burlubaru L. P. School

Only one building has been constructed for Burlubaru L. P. School. Funds sanctioned and placed at the disposal of the Block Development Officer, Tumudibandh remains unutilized as yet. Instructions were issued from the Government in the Community Development Department to supplement funds from R. L. E. G. P. in case additional amounts were required. In spite of all such instructions the grants have not been utilized causing serious dislocations to the school educational programme.

Building grants were also sanctioned by the Government in the Education Department in favour of Dupi L. P. School and Pakuru L. P. School at the rate of Rs. 27,770 each in the year 1986-87 out of the Eighth Finance Commission award. Buildings have been constructed and utilized for these two schools. A Sikshya Karmi who has been posted as teacher in Dupi L. P. School resides in one room of the school and the other room is used as class room. The problem of accommodation of the teacher was solved without any disturbance to school programme. The villagers spoke in favour of the regularity and sincerity of the teacher.

Appropriate steps should be taken to expedite construction of buildings for Batipada, Dharanimaska and Burlubaru Primary Schools for which building grants have already been sanctioned and the money kept in the P. L. Account of Tumudibandh Block should be quickly utilized. Grants may be obtained for Germali, Gurlimaska and Pikushi Primary Schools and buildings may be constructed early in order to carry on the school activities regularly.

Teacher Position—Government of India have decided that there shall be no single-teacher primary schools in the country. Single teacher schools are virtually closed when the teacher is absent on account of his illness, or casual leave or is unauthorisedly absent. Singleteacher schools are considered inefficient and unsuitable for various reasons. Therefore, a policy decision has been taken to convert all such schools to at least double-teacher schools.

Government of India are providing second teachers to all single-teacher schools under the Operation Black Board Scheme. The Operation Black Board Scheme is being implemented in four phases out of which implementation of two phases has been completed and the third phase though completed in many other States is under operation in Orissa.

Selection of blocks for coverage under Operation Black Board Scheme is made on the basis of backwardness. On application of such a criterion of selection, Tumudibandh block should have been selected in the first phase. Tumudibandh block with its primitive tribe and other tribal population, its location in the deepest terrain of Orissa should have been considered as one among the 65 blocks selected in the first phase. It is unfortunate that it could neither be included in the first phase nor in the second phase. Both the phases have covered 50 per cent of the blocks and Municipal areas of the State. However, it is a matter of consolation that it has been included in the third phase which is being implemented at present.

As many as 15 Primary Schools out of 19 run by the Education Department in Bolghar Project Areas are single-teacher lower primary schools. 15 teachers are going to be provided as second teachers to the single-teacher primary schools under the Operation Black Board Scheme during the current academic session.

It has been decided by the Education Department that Lower Primary Schools having twot eachers in the minimum should be upgraded to Upper Primary Schools and will be entitled to maintain five classes from I to V and will be called Primary Schools. In other words it has been decided to convert all Primary Schools to Upper Primary Schools in the State and no Primary School shall remain a single-teacher school. Thus, all the Primary Schools of Bolghar Project Area shall be entitled to maintain class I to V, immediately after second teachers are posted under Operation Black Board Scheme. The third phase of the Operation Black Board being in process the teachers are likely to be posted soon.

Teacher absentism—The posts of teachers of three single-teacher schools are vacant. The schools are—

(1) Rangapuru L. P. School

(2) Pikushi L. P. School

(3) Dharanimaska L.P. School

Since these are single-teacher schools and the teacher posts are not filled up virtually the schools are, closed. Incidentally the three schools do not have buildings. On spot visit the villagers of Rangaparu said that the school was not functioning since one year. Students had discontinued studies since then and they were otherwise engaged by their parents. Rangaparu is the biggest Kutia Kandha village with a population of 321. Total number of children available in 6—11 age-group is about 40. These 40 children are deprived of getting education due to the negligence of the D, I. of Schools, Baliguda in posting a teacher. Dharanimaska L. P. School and Pikushi Primary School were understood to have remained closed due to non-posting of teachers for long.

Burlubaru L. P. School and Khadpanga L. P. School are two single-teacher Primary schools. The posts of teachers are officially filled up. But on spot visit the schools were found to be closed. The villagers of both the villages complained that the schools were closed since about one year. The teachers concerned did not attend

schools continuously for long periods. Students are not in the habit of attending schools. Both the schools have pucca buildings with asbestos roof. Doors were kept open. Rooms were found dirty. The villagers evinced interest in the studies of their children. They expressed their worries over continued absence and negligence of the teachers. It was understood that the teachers belonged to Belghar area. Yet they neglected their legitimate duties. When asked the villagers said that they had not lodged any complaint against the teachers.

Dhudusi upgraded M. E. School was found to be closed on the date of visit. The school was closed. It was informed by the villagers that only one teacher attended school that day. Two other teachers were absent. Some persons reported that one Headmaster was posted there but he never attended school. It was also informed by the villagers that the school is kept open and one teacher attends school. It was not possible for one teacher to teach in seven classes of the U. G. M. E. School. There had been no occasion when all the teachers attended the school on a particular day. It was just a formality to keep the school open without any teaching-learning activity.

No villager could give any information about inspection of the school by the District Inspector of Schools who is competent to inspect the school. This being an Upgraded M. E. School the D. I. of Schools is competent to inspect the school. It was very clear that negligence of supervision work resulted in such a chaotic situation.

Records of the school could not be seen. The teacher who attended school that day was nor residing in the village. He was reported to be residing at Belghar. The village is inhabited by Scheduled Castes and others, called Oriyas. The people seemed to be conscious about negligence of the teachers but they were not interested to move the higher authorities against the teachers. One young man said that a move against the teachers in the past had deteriorated the situation.

It would be of no avail to write a petition. He considered it better to go without education than wasting time against teachers.

The situation was extremely alarming. It was an indication of complete failure of educafional administration in that area. Necessary remedial measures are to be taken as suggested in the action plan.

Paikapada, a non-Kutia Kandha village situated on the road-side was visited on way back to Belghar from Dhudusi. The village has a population of 53. The children of this village attend the non-formal centre opend at Rajam at a distance of half a kilometre.

Rajam is a Kutia Kandha village with a population of 62. The non-formal teacher was present at the time of visit. 15 children were admitted in non-formal education centre—6 from Rajam and 9 from Paikapada. An untrained H. S. C. passed teacher is working there since 6 months.

There is a Residential Sevashram at Belghar run by the H. & T. W. Department and another U. P. School run by the Education Department. The U. P. School has a pucca building with asbestos roof with two rooms. Students of all the five classes were sittng in one room. The other room was closed. Another building was under construction out of Jawahar Rojgar Yojana. One teacher was present at the time of visit. When asked about other teachers he informed that two other teachers had

gone to their residence during recess. He was set to call the other two teachers. But he came back being accompained by another teacher who informed that the Head Pandit was on casual leave and the C. L. application was with the Sub-Inspector of Schools, Thmudibandh. As a rule the President of the School Committee is to grant C L. to teachers. There was no reason to send the application to the Sub-Inspector of Schools. Only 19 children out of 60 attended school that day. It was understood that the school was closed for two days every month when the teachers go to receive their salary from the Block. Arrangements should be made for disbursement of the salary of teachers of Belghar project area at Belghar which would prevent closure of schools for two days every month.

Enrolment in Primary Schools—Total population of the Kutia Kandha project area, Belghar is 7,475—Kutia Kandha 4,090 and Scheduled Castes and another castes 3,385. The estimated child population in the age-group of 6—11 years is 12 per cent as per 1981 census calculations. Hence the child population of the Kutia Kandha project area in the 6—11 years age-group is 897. The total enrolment In the Primary Schools and primary classes of M. E. Schools is 540. The enrolments of the residential sevashram, Belghar is 140 and that of primary classes of Guma Ashram School is 108. Almost 50 per cent of the enrolments in Ashram and Seva-shram Schools are from outside the project area, Hence while calculating the percentage of children enrolled in schools we may add 124 out of 248. Thus the total number ot children admitted in the Primary Schools and classes is 664 out of 897 constituting 74 per cent gross enrolment.

The net enrolment is statistically calculated to be less than 25 per cent. Because the child population of 6—11 years age-group is calculated at 12 per cent of the population. But in actual admissions in Orissa there are provisions for admitting children of 5+. Hence almost all children admitted to Class-I are outside the ambit of the child population of 6—11 age-group, In tribal areas some children are usually admitted at late age. Hence for calculating the net enrolment we may deduct 20 per cent from the gross enrolment. Thus the net enrolment, would be 54 per cent of the child population.

TABLE 4·10·2

Classwise enrolments of the Primary Schools

Name of the School	No. of teachers	I		II		III		IV		V	
		B	G	B	G	B	G	B	G	B	G
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1. Belghar, U. P. S. ..	3	10	8	11	7	9	6	4	2	1	2
2. Bilamal, U. P. S. ..	1	2	5	4	9	8	2	7	..	3	..
3. Bandaguchuka U. P. S. ..	1	3	1	2	1	2	1	4	5	5	2
4. Randaga, U. P. S. ..	2	5	2	4	3	8	3	3	4	4	1
5. Bikapanga, L. P. S. ..	1	1	3	4	3	7	3	..	..	..	..
6. Batipada, L. P. S. ..	1	3	4	4	6	..	..	..	..	..	..
7. Burlubaru, L. P. S. ..	1	7	3	7	..	8	6	..	..	..	..

Name of the School	No. of teachers	I		II		III		IV		V	
		B	G	B	G	B	G	B	G	B	G
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12
8. Khadapanga, L. P. S. ..	1	7	3	9	3	7	3	..	..	..	..
9. Kineri, L. P. S. ..	1	3	1	5	1	8	1	..	..	..	..
10. Garanga, L. P. S. ..	1	3	3	6	4	8	4	..	..	..	..
11. Dupi, L. P. S. ..	1	..	4	5	5	6	2	..	..	..	..
12. Gurlimaska, L. P. S. ..	1	4	4	4	6	..	..	..	..	..	..
13. Dogada, L. P. S. ..	1	1	3	1	3	3	3	..	..	..	..
14. Kukuru, L. P. S. ..	1	4	1	2	5	4	2	..	..	..	..
15. Sishabata, L. P. S. ..	1	8	7	5	1	8	3	..	..	..	..
16. Germale, L. P. S. ..	1	3	7	4	6	4	6	..	..	..	..
17. Dharanimaska, L. P. S.	1	3	3	1	2	2	1	..	..	..	..
18. Pikushi, L. P. S. ..	1	3	1	3	1	3	..	..	..	..	..
19. Rangaparu, L. P. S. ..	1	4	2	3	1	..	2	..	..	..	..
20. Dhudusi, U. G. M. E.	2	7	5	10	7	10	2	5	4	10	..
		81	70	94	74	105	50	23	15	23	5
1. Gumma Ashram School	4	48	..	22	..	15	..	18	..	5	..
2. Belghar Residential Sevashram.	4	39	9	27	12	20	4	12	6	11	..
		87	9	49	12	35	4	30	6	16	..

The non-enrolments are mainly due to non-provision of Schools in the smaller villages. Out of 78 villages of the Kutia Kandha Project Area, Belghar, 22 villages have been provided with Primary School facilities. The remaining 56 villages have not been provided with schooling facilities. That is the main reason for the poor enrolments.

The villages are so distant from one another that no child of school-going age can attend school in the neighbouring village. Moreover, almost all the villages are surrounded with jungles through which no parents would like to send their children to the school of the neighbouring village.

Some of the school-going children of the villages where schools have been established are admitted and some other are not enrolled. The reasons are mainly economic. The parents cannot afford to pay for education of the children. On the other hand they desire that children. should be engaged in some activity to supplement the family income or at least do the baby-sitting work when both the parents are out for work in the forest or field.

Drop out—There are a various causes of drop out of tribal students from the schools. A statistical study over a period of time would indicate the actual number and percentage of drop outs of children from schools. In absence of a longitudinal study a cross-sectional study may be made to have a rough idea of the magnitude of drop outs from the schools of the project area. Total number of students enrolment in Class I is 247.

and 21·5 per cent drop out at Class III level. But retention at Class V level as only 22·1 per cent, which means that 77·9 per cent drop out by the time they reach Class V. Among other reasons non-provision of facilities stands out to be the most conspicuous. Classes IV and V are provided in 7 schools only against Classes I, II and III are provided in 22 schools.

The over all drop out position of the State of Orissa is 46 per cent between Classes I and V. But it is 77·9 in the Kutia Kandha Project Area, Belghar. This should be reduced by providing facilities of Classes IV and V in the schools where these classes have not been provided.

The Block Development Officer, Tumudibandh Block informed that mid day meals were being served in 10 Primary Schools, 5 each in Guma and Belghar Grama Panchayat and five in Belghar Grama Panchayat. In the tribal areas where giving two meals regularly to children is a problem for the parents, mid day meals served as good incentives for enrolment, retention and regularity in attendance of students. The mid-day meal facilities should be extended to all the primary and middle schools of the project area.

Aids facilitate learning, conceptualisation without real objects or models or pictures thereof, is extremely difficult for children. Understading the importance of aids and the poverty of our schools in respect of provision of aids, Government of India while proclaiming the National Policy of Education, 1,986 daclared to implement the operation Blackboard Scheme. Under the Operation Blackboard Scheme, Government of India provided funds for supply of globes, maps, charts, black boards with stand, game articles, musical instruments and other materials at a cost of Rs. 7,315 for each Primary School. It was also decided to supply two-in-one to all schools and coloured Television sets to those Primary Schools which are electrified and are located within the range of transmission of T. V. pictures. Science kits and tool bags are also supplied to Primary Schools to serve as teaching-learning aids.

It has already been mentioned earlier that in spite of its backwardness and locatien in the terrains of Phulbani district, Tumudibandh Block could not be selected in the first and second phases for its coverage under Operation Black Board Scheme. It is learnt that it has been selected in the third phase and the teaching-learning aids are going to be supplied soon along with other benefits like providing second teachers to all the single-teacher schools of the Block.

During spot visit no teaching aids could be found in any Primary School run by the Education Department. Some schools having buildings which were found wide open at the time of visit. There was nothing inside the rooms. One or two schools have wall blackboards. It can be well-imagined that teaching in these schools is abstract and ineffective without any aids. What is still more surprising is that not a single person of the village said that he had kept the school records with him. The schools run by the H. & T. W. Department do have some aids but are inadequate. Appropriate aids to facilitate learning and formation of new concepts were not seen in any school.

Table, chair and Almirah which are the minimum requirements of a school have not been provided to the schools visited except the Sevashram and the Ashram Schools. The basic minimum requirement of furniture should be supplied to the schools for their use.

H. & T. W. Department Schools—Belghar Residential Sevashram is located in Government High School, Belghar campus. It was established in the year 1960 and upgraded to an Ashram School (M. E. Standard) in the year 1966 and again upgraded to a high school in the year 1979-80. After the upgradation of the Ashram School to the high school, the management of the Residential Sevashram was separated in the

year 1980. It is not understood under what considerations the separation of management was made. When efforts are being made now to amalgamate the Institutions located in the same campus for unity of control and better standard of teaching, the separation has been done in the opposite direction. For better standard of education and in favour of integrated administration the management of both the schools should be amalgamated.

There are four sanctioned posts of teachers and three attendants. The number of students being 140, teacher-pupil ratio is 1:35. It conforms to the standard of teacher-pupil ratio prescribed by Education Department. But in case of tribal children the ratio should be still lower in order to enable the teacher to take personal care of the progress of studies of individual children.

A teacher-pupil ratio of 1:25 may fixed for tribal children. At least one more teacher may be provided to the school which will reduce the teacher-pupil ratio to 1:28.

TABLE 4·10·3

Attendance on the date of visit

Class	Attendance as on 26-4-1991	Enrolment	Enrolment of Kutia Kandha children
(1)	(2)	(3)	(4)
I	21	48	35
II	32	39	18
III	18	24	9
IV	15	18	4
V	9	11	6
Total ..	95	140	72

There is heavy demand for admission in residential school. Students from other districts sometimes come for admission. The residential schools have to be choosy in respect of students. Only 72 Kutia Kandha children have been admitted in the School which constitute 51·42 per cent. The teachers should have tried for admission of more Kutia Kandha children in preference to others.

The attendance was 67·85 per cent (95/140) on the date of visit. The percentage of attendance should not be so low in a residential school. It is observed that percentage of attendance is lower in classes I, II and III.

The school has building consisting of 4 rooms out of which one room is used as office, one room as store and the two other rooms as class room-*cum*-dormitory. A hostel building has been constructed by the I. T. D. A. which is also used as class room-*cum*-hostel. The main school building is in adilapidated condition requiring speciai repair. Two more class rooms may be constructed to solve the problem of accommodation for classes.

Other deficiencies of the school demand attention of the authorities. There are no Tables and chairs in the class rooms. Maps, charts and science apparatus for teaching elementary/science have not been provided. These deficiencies may be removed shortly when Tumudibandh block comes under the operation BlackBoard Scheme. The building deficiencies may be removed on a priority basis.

There are two other primary sections, One attached to Guma Ashram School and other to Dhudusi U. G. M. E. School which are being analysed in M. E. Section.

M. E. School Education—There are three schools imparting education at the M. E. School stage.

1. Dhudusi U. G. M. E. School
2. Guma Ashram School
3. M. E. Section of Government High School, Belghar

The position of Dhudusi M. E. School has been discussed under Primary Section and that of M. E. Section of Government High School, Belghar will be discussed under secondary education.

Guma Residential Sevashram was established in the year 1979-80 and was upgraded to Ashram School of M. E. standard in the year 1980-81. An area of Ac. 2·50 decimals is occupied by the school without a compound wall.

Building Position—A part of a dilapidated building is used as Office room and another part is used as class room. The front portion of the building has collapsed. The old Sevashram building is used as classrooms.

A 30 seated low-cost hostel is under construction for girls. After completion of this hostel, the problem of buildings will be partly solved. But anorher building for the school office and class rooms need to be constructed.

Living condition of the students buildings for kitchen, dining and living should be provided. It is reported that management of school affairs without adequate building facilities has become extremely difficult.

Teacher Position—The post of Headmaster is lying vacant. Two Assistant Teachers, one Hindi Teacher and one Agriculture Teacher were present. The posts of Tailoring Teacher, Carpentry Teacher and 3 Sevaks are lying vacant.

There are five sets of Teachers' quarters and two sets ot Attendant's quarters. All the teachers and attendants are accommodated in the existing quarters.

There are four Class IV employees, one Cook-*cum*-Attendant has been appointed on daily wage basis.

Attendance and Enrolment—130 students have been admitted in the school out of which 120 are boarders and 10 are day scholars.

The following is the classwise distribution : —

Class					
I	..	48			
II	..	22	Scheduled Tribes	..	35
III	..	15	Saheduled Castes	..	92
IV	..	18	General	..	3
V	..	6			
VI	..	7	Total	..	130
VII	..	14			
Total	..	130			

Total number of students attending school on the date of visit on the 24th April 1991 was 85 constituting 65·38 per cent. The attendance position for a residential school is not encouraging.

Total number of Kutia Kandha children admitted in the school is 18 constituting 13·8 per cent of the total enrolment. In residential schools students are admitted from far and near villages and there is rush for admission. But where there are primitive tribe children preference should be given to them in admission. The teachers should be entrusted with the responsibility of motivating the Kutia Kandha people for admiting their children in schools. A quota may be reserved for the Kutia Kandha children in residential schools. The education of the primitive tribe children along with children of other tribes and non-tribes is educationally sound in so far as, they would have exchange of ideas with others and their behaviour would be gradually modified.

Inspite of paucity of water the kitchen garden is well-maintained. Brinjals, cabbage, cauli-flower, radish, onion and tomato were grown in winter. At present, only papeya and banana plants are seen in the garden.

The school was inspected by the Inspector of Schools, Southern Division (H. & T. W. Department) on the 11th November 1987 and by the Deputy Inspector of Schools on the 8th October 1989. No academic supervision has been done during the last one year and half. The Project Administrator, I. T. D. A., Baliguda visited the school on the 25th October 1990. Frequently academic supervision can only improve the educational achievements of the students which seems to have been neglected in respect of Guma Ashram School.

Secondary Education—There is only one high school to cater to the educational needs of the entire Kutia Kandha Development Project area, i. e., Government High School, Belghar located at the Project headquarters.

A Residential Sevashram established at Belghar in the year 1960 was upgraded to Ashram School (M. E. Standard) in the year 1966. The school was subsequently upgraded to High School in the year 1977. Tha school presented the first batch of students to the H. S. C. Examination in the year 1983.

Building position—The high school is managed in the erstwhile Ashram School buildings. Although the high school is functioning for the last 14 years so additional buildings for classrooms, office, store room or craft sheds have been constructed. Consequently the affairs of the high school are managed with difficulties. There are nine rooms of the old Ashram School, Belghar out of which one room is used as office, one for carpentry class-*cum*-store, one for Tailoring class-*cum*-store and another for agricultural implements store room. Five rooms are used as class-rooms. The school activities are tightly managed in the old buildings. No accommodation is available for the science room, teachers, common room, girls' common room, library, store for sports articles, etc.

The old hostel of the Ashram School measuring 12'×100' (Plinth area 1,200 sq. ft.) is accommodating 120 boarders who would require 3,600 sq. ft. in the minimum. There is enough of conjestion in the hostel due to dearth of plinth area.

A building has been constructed for the girls' hostel with 30 seats and another 40 seated hostel building for the boys is under construction. On completion of construction of this hostel the problem of accommodation of the boarders may be solved. But additional buildings for the school will still remain a necessity.

There are 12 sets of teacher's quarters which are old ones requiring repairs. No residential quarters is available for the Headmaster and Class IV employees. Two quarters are under construction for the Class IV employees.

A compound wall is a necessity for the school campus in order to safeguard the agricultural plants and the kitchen garden. Besides a compound wall is nesessary to check encroachment into the school area and to maintain discipline.

Teacher position—It is a matter of consolation that all the posts of Teachers are filled up except one Trained Graduate Science (C. B. Z.) post and the teachers were in position at the time of visit.

There is one trained Arts Graduate Headmaster and two other trained Arts Graduates in the school. One Trained Science Graduate (P. C. M.) is managing all the science classes. Besides the above, two Matric C. T. teachers for the lower classes. One Sahityacharya Sanskrit teacher, one B. A. Kovid Hindi teacher, one I. A. C. P. E. D. Physical Education teacher, two I. T. I. trained teachers as Tailoring and Carpentry teachers and one Matric Untrained Agriculture teacher are functioning in the school. One Graduate Clerk, one Duftary and three Attendants are also working in the school. The requisite staff is in position.

Enrolment

TABLE 4·10·4

Attendance of students as on the 25th April 1991 and Tribal/Caste-wise enrolment position for the current academic session

Class	Attendance on 25-4-1991	Enrolment			
		Total	S. C.	S. T.	Others
(1)	(2)	(3)	(4)	(5)	(6)
VI	31	34	7	25	2
VII	22	24	9	12	3
VIII	31	42	14	26	2
IX	24	24	13	9	2
X	15	18	11	5	2
Total	123	142	54	77	11

The attendance being 86·62 per cent of the total enrolment is satisfactory on the whole. But the inter-class variation has to be taken care of. In Class-IX the attendance is 100 per cent but in Class VIII it is 73·8 per cent. The causes are to be investigated into and problems, if any have to be solved.

The enrolment structure, on analysis, gives an unsatisfactory picture as far as the Scheduled Tribe and Kutia Kandha children are concerned. Scheduled Tribe children constitute only 54·22 per cent of the total enrolment and the number of Kutia Kandha children being only 9 constitute only 6·33 per cent. The school is situated in the Kutia Kandha Development Project Area which is a primitive tribe. Priority should have been given to them for admission. If such students were not available measures should have been taken for motivating them to be admitted in primary schools and classes, so that there would not have been problems of availability of students for admission in high school classes. Total No. of Kutia Kandha children admitted is as follows:—

Class VI	..	5
Class VII	..	1
Class VIII	..	3
Total	..	9

Drop-outs during 1990-91—Drop-out due to long absence is a common feature among tribal children. Such drop-outs in primary schools are frequent. It is expected that since residential schools have feeding programme, there should be no drop-out unless some social problems or maladjustment problems are there. The following statement shows that 17 students dropped out from the high school during one year which is rather uncommon:—

TABLE 4·10·5

Statement of drop-out students

Class	Boarders			Day-scholars				Total			
	S. C.	S. T.	Total	S. C.	S. T.	Others	Total	S. C.	S. T.	Others	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
VI	..	..	..	..	..	1	1	..	..	1	1
VII	..	1	1	..	..	1	1	..	1	1	2
VIII	2	8	10	..	..	..	..	2	8	..	10
IX	..	..	..	1	..	..	1	1	..	..	1
X	2	1	3	..	..	..	..	2	1	..	3
Total	.. 4	10	14	1	..	2	3	5	10	2	17

It may be seen from the above statement that drop-outs from boarders are more than the day-scholars. Again drop-out from Class VIII is the highest. It is presumed that those students who came from other schools and admitted in Class VIII could not adjust themselves in the hostel. Hence they dropped out. The causes of drop-out should have been investigated into in order to bring them back or to check recurrence of such cases.

Examination results—The first batch of candidates of the school appeared at the High School Certificate Examination in the year 1983. The following statement would indicate the results of the school over the last eight years:—

Results of the School in H. S. C. Examination

TABLE 4·10·6

Year	No. of candidates appeared	No. passed	Percentage of success
(1)	(2)	(3)	(4)
1983 Senior ..	20	1	5%
Junior ..	20	Nil	Nil
1984 ..	23	3	13%
1985 ..	11	4	36·3%
1986 ..	13	8	61·5%
1987 ..	10	2	20%
1988 ..	32	9	28·1%
1989 ..	10	10	100%
1990 ..	7	3	42·8%

An analysis of the High School Certificate Examination results of the school over the last eight years shows steady improvement barring the results of 1987 and 1988 when the percentage of success came down to 20 and 28·1, respectively. Similarly the results of 1989 rose up beyond the trend and reached 100 per cent.

Science apparatus—Science apparatus supplied to the school are inadequate to meet the curricular requirements. A few common items for teaching magnets, prism, light in physics; some apparatus for teaching chemistry are available. But the syllabus has been enriched in the meantime and many new topics have been incorporated in physics, chemistry and biological sciences which need sophisticated apparatus for experimentation in classrooms. Unless requisite apparatus are provided the lessons would remain abstract to the students beyond their understanding.

Teaching equipments—Maps, charts, models, etc., are inadequate particularly models in geography, historical maps, civics charts, pictures of men of science and literature are necessary for making learning interesting. These deficienices need be removed soon.

Other problems—(*a*) Enrolment of girls-women of the Kutia Kandha tribe are very laborious and are earning units of the family from early ages. No girl student is seen above Class VII. Number of girls in lower classes also is too meagre.

(*b*) Supply of reading and writing materials to Scheduled Castes and Scheduled Tribe students, reading and writing materials are not supplied during the months of June and July. The students being poor are not capable of purchasing the books and writing materials delayed supply of the same causes delayed progress. It is reported by the Headmaster that reading and writing materials were supplied in mid-November during the academic session 1990-91. Such delays contribute to the unsatisfactory achievement of students because the students do not get adequate time to read and digest the contents of text books and quantum of written works becomes less than the required minimum.

(*c*) *Problems of the boarders*—

(*i*) Health problems—Belghar area is endemic to meningitis. There have been incidences of deaths due to meningitis attack. Students are not supplied with the required number of mosquitonets. Meningitis being a fatal disease, students are exposed to it. Students also suffer from malaria, scabies, diarrhoea, dysentery, etc. There is a hospital at Belghar but medical officers are not available very often.

(*ii*) Problem of light—Belghar being the Project Headquarters has not yet been supplied with electric energy. Hence, the question of students getting electric light does not arise. Supply of kerosine oil is very irregular. Students do not get any chance to read during evening hours.

(*iii*) Cooking utensils are not replaced by new ones when demaged. Hence cooking is too often delayed and some days students go to take their food during school hours at the cost of studies.

(*iv*) Belghar being situated at an altitude of 2700 ft. from sea level experiences bitting cold during winter, good blankets are not supplied in requisite number. Hence students are troubled during winter.

(*v*) Driking water-supply and water-supply to kitchen garden—Paucity of water-supply for drinking is responsible for a number of stomach disorders. Three tube-wells have been sunk inside the school campus but the platform have not yet been constructed. Hence drinking water is polluted. It has been difficult to maintain the kitchen garden due to dearth of water-supply.

(*vi*) Inadequacy of stipends—Each boarder gets a stipend of Rs. 100 per month for his maintenance. In these days of escalation of prices of food matearials a sum of Rs. 100 per month is too inadequate for their maintenance. The amount should be enhanced to Rs. 150 per month per boarder.

(*d*) Non-introduction of Pre-Vocational courses.

Three crafts have been introduced in the school in addition to the curriculum prescribed for the High School Certificate Examination. But there are opportunities for introducing pre-vocational courses in dairy, goatary, piggery, poultry, etc. in order to give the rudiments of these vocational courses so that the students after passing out from here could practise these professions. Self-employment would be the objective of introducing these courses.

It is gratifying to note that the students manage their own mess under the supervision of teachers. The students seemed disciplined and sincere. Teachers guide the students well. This being the only high school catering to the educational needs of the entire Kutia Kandha Development Agency as the secondary stage has to be equipped fully to impart good and useful education to the Kutia Kandha students.

An overview of the educational activities of the Kutia Kandha Development Agency—It is remarked with grave concern that educational development of the Kutia Kandha is not considered a responsibility of the Kutia Kandha Development Project, Belghar. A sharp difference is drawn between the Central Sector and State Sector activities. Education and Health are State Sector responsibilities. Therefore, the project functionaries do not bother themselves about educational development of the people. Neglect of the education sector is proved from the account of the activities furnished by the special officer, K. K. D. A., Belghar.

There is a mention of 3 items under education programme—

(a)	Construction of non-formal school building, salary of teachers, cost of reading, writing materials, contingency supply of dress to the students.	Rs. 3,80,328·31
(b)	Construction of hostel building at Guma Ashram School.	Rs. 20,000·00
(c)	Construction cost of school buildings of Education Department.	Rs. 45,000·00
	Total	Rs. 4,45,328·31

There is a mention of the fourth item, i. e., Training of the Kutia Boys but no expenditure has been incurred for this item.

The weightage given in terms of financial assistance is an expenditure of Rs. 4,45,328·31 out of the total expenditure of Rs. 56,97,053·21 constituting 7·8 per cent only.

Education should have been considered as the key sector of development wing. If it is argued that inspite of help of the staff of the Micro Project, satisfactory results could not be achieved because education has been utterly neglected in this area. Schools are in existence but most of them are not functional. Large number of villages are not provided with even Primary School facilities. The literacy position (1.1 per cent) indicates that there has been no impact of the Audit and Elementary Education on the people.

Schools run by the Education Department are mostly disfunctional.. There is no supervision of schools. The teachers remain absent for long periods. Academic progress is never checked up. Such an unfortunate situation could be avoided if the Project staff had taken some interest in checking the teacher attendance position and reporting the same to the higher authorities of Education Department. The educational achievements are far below the minimum level. The spot visits of the Project Consultants revealed disappointing pictures. They found most of the Schools closed. Schools have no building, no equipments and no teaching aids. Absentism of teachers has given a hard kick to the development of education.

ACTION PLAN FOR EDUCATION

General Approach—Education is a crucial input for all sectors of development. The role of education has to be defined as an instrument to achieving the broad objectives of community development. In particular, it should help in creating awareness amongst the tribals and should ultimately build up a capability amongst them for self-directed economic development. To conceive of development without education is a meaningless proposition. There is nothing wrong in attributing the slow pace of development in Kutia Kandha Project Area to the neglect of education.

The percentage of Literacy among the Kutia Kandha, Belghar is elfeven (11 %). It has been mentioned earlier that literacy is the outcome of the combined efforts of all the educative processes of an area formal, nonformal and adult education. Level of understanding of the people about the operational strategies of the schemes introduced in Belghar Projects can be well-imagined with its illiterate population of 89 per cent.

It is relevant to quote the observations of an eminent educationist on the tribal sitution relating to educational scene. "Another distinguishing feature of the tribal situation is that the formal educational system has not as yet made any impact. In some areas the formal system is completely absent. Even in those areas where institutions have been set up, they are hardly functional. Therefore, these areas are amenable to non-traditional innovative programmes where advantage can be taken of the new developments in the methods of education for the formal as well as the nonformal systems." All these observations are applicable to the Kutia Kondha area.

The tribal scene poses a challenge to education in so far as it can provide a protective shield to the community and help them to build an inner strength so that they can have a smooth transition to modernisation. The challenges should be faced with specially designed programmes to suit to the socio-cultural setting and level of material development achieved by them.

Against this back drop the approach to education of the Kutia Kandha should be designed land executed. The following general approaches may be considered:

(1) There are strong traditional community leadership in all villages. The community leaders are strictly followed and obeyed by all the villagers. The community leadership should be the focal points and chief help for spread of education in the Kutia Kandha villages. The Mutha organisation of the Kutia Kondha which was very powerful once upon a time, is now gradually getting obsofete. Hence the village leader who is called the "Bada Majhi" or the "Pata Majhi" is now the Chief help for spreading education in Kutia Kandha villages.

(2) The youth organisations play an important role in the community life of the Kutia Kandhas. These institutions are essentially organisations for training the future citizens. They are vibrant with activities of a wide variety. The frame for their training has been familiar customs, traditions and requirements of the local community.

These organisations have been responsible for instilling a sense of participation by each individual in the community life. Each member is prepared to appreciate the individual role and assume the heavy responsibility of adult life. Thus, the youth organisations can provide substantial assistance in executing the educational programmes but utmost care has to be taken to see that their traditions should be the base for building up the structure of the programme designed to be introduced particularly in adult and elementary education.

The cluster approach— Emperical evidences indicate that larger units of administration are not successful particularly when the locations of execution are distant from the administrative headquarters. That is why, units of administration are made smaller for better supervision and monitoring. The cluster approach is an attempt to make execution units smaller so as to ensure better work of the functionaries of different sectors.

The clusters are conceived as sub-centres of execution, supervision, monitoring and control of schemes introduced by different sectors like education animal husbandry, health, agriculture, soil conservation, etc. Belghar project has been divided into six clusters of villages in consideration of the geographical location of villages, facilities of road communication and distance from the centres of execution. Cluster headquarters are central villages from where all the villages within the cluster can be easily approached. Schemes can be easily executed, supervised and monitored from the cluster headquarters.

It is observed that very often schemes are introduced and functionaries and posted to villages where there is no accommodation to live in. Expecting any work from a functionary who does not have living accommodation is meaningless. Schools are expected to run in the villages of the primitive tribes without building when people hardly have living accommodations for themselves. Sometimes the functionaries do not have the social security at the places of work. In order to overcome these difficulties it is proposed to construct barracks with 8 to 10 spacious rooms, each room being an independent unit with a kitchen space at the rear verandh and a latrine with a squatting plate. A functionary may live with family in one unit if he likes. The barracks will solve the problem of living and social security of the functionaries. Barracks are more economic than providing family quarters to individuals. When all the functionaries of different sectors are accommodated together they may help each other at times of illness or other difficulties.

The cluster approach is supposed to increase the efficiency of the functionories and yield better results in execution of schemes.

LIST OF CLUSTERS AND THE VILLAGES ATTACHED TO THE CLUSTER

Cluster I, Headquarters, Belghar

1. Belghar
2. Kusumunda
3. Rangaparu
4. Sanakumudi
5. Germali
6. Tuakola
7. Sanatuakola
8. Sembedapadar
9. Madalkuna
10. Deogada
11. Burulubaru
12. Kadapana
13. Jhalipada

Cluster II, Headquarters, Bilamal

1. Bilamal
2. Kranjikana
3. Srambuli
4. Michedubaru
5. Bikapanga
6. Mandamaska
7. Anbidikhol
8. Gumapadar
9. Karlangi
10. Puskadi
11. Guibali
12. Dharanimaska
13. Mundimaska
14. Dhumamaska
15. Muskasaru
16. Saperibhata
17. Dhudsi
18. Khadpanga
19. Rajam
20. Garanga
21. Paikapada
22. SilKudi

Cluster III, Headquarters, Gumma

1. Pukuru Colony (Gumma)
2. Tidipadar
3. Guchuka
4. Saperi
5. Gambhari
6. Sushabato
7. Pagerpadi
8. Salapata
9. Jamuguda
10. Kineri
11. Ranganga
12. Kranja
13. Kanibhata
14. Pedam
15. Nuamunda
16. Bariguda
17. Pringel
18. Kalanguda
19. Dupi
20. Mahabali
21. Mathaghati

Cluster IV, Headquarters, Kanibaru

1. Kanibaru
2. Sipidikhol
3. Golampanga
4. Talamgpadar
5. Bhandarsal
6. Pairmal
7. Sindhibali
8. Lindarang
9. Bhaluguda
10. Sukarpadar

Cluster V, Headquarters, Batipada

1. Batipada
2. Gurlimaska
3. Targabali
4. Gunusupa
5. Adalangu
6. Girisasa
7. Badakududi
8. Sadangi

Cluster VI, Headquarters, Ushabali

1. Ushabali
2. Pikusi
3. Sanaguchuka
4. Dahabali

Adult Education

Objectives—Adult Education Programme should clearly define its objectives and prepare implementable plan for achieving the objectives. The following objectives may be accepted for this primitive tribal area :—

1. The huge number of landless labourers indicate that there have been rampant exploitations of the Kutia Kandhas in the past, so much so that the land owned by these people has been snatched away from them. The adult education should help the tribals to understand how to prevent exploitation of their resources and encroachment on their freshly acquired rights under the new legislations.

2. It should give better understanding of the economic processes, the regulation about exchange economy bringing about the basic difference between their traditional economic frame and the modern frame.

3. It should impart knowledge, about functioning of co-operetives and their financial agencies.

4. It should help them acquire skills of learning including literacy so that they may be able to negotiate effectively with the world around them.

5. It should assist them in acquiring appreciation of their culture. They should be able to preserve their vibrant culture, so that it may not be smothered by outside influences.

Target Group—All the illiterate adults of Kutia Kandha Project area in the age-group of 15—35 years with special emphasis on (*i*) women (*ii*) landless labourers and (*iii*) marginal and small farmers.

Methods—An oral approach should be followed in the initial stages. The adults should be encouraged to participate in the discussions, about their land, agriculture, their rights, new rules and regulations and their way of life. After rapport is established and a foundation is made the written approach may be initiated. Reading and writting may be started simultaneously. The discourses and discussions should be made in the language of the Kutia Kandhas.

The strategy—As discussed earlier the centre based approach for short duration of 6 to 10 months under the present Adult Education Scheme will not work in this primitive tribal area. A longer exposure to reading and writing is necessary with follow-up programme for the neo-literates. It is proposed that the non-formal teachers should be entrusted with the Adult Education Programme. They are now teaching the school-going children of smaller villages where formal schools have not been established. They are paid at the rate of Rs. 400·00 p.m. It is proposed to enhance their remuneration to Rs. 750·00 per month. They should continue to teach the children in the morning and take up adult education in the afternoon and evening. Each non-formal teacher will be allotted two villages. They are to attend each village on alternative days, so that continuity of learning is maintained and the second village may not wait till two years when the learning of the first batch is completed.

The achievements of the non-formal teachers are to be monitored and assessed by the Supervisor who is proposed to be posted exclusively for the Belghar Project area. The teachers are to maintain registers of adult illiterates after survey and list of those who have been made literate. The size of the adult group for instruction should not exceed 30 since the villages are small, the group may be small.

There are 12 Non-formal Education Centre in the following villages. A second village is attached to the original village to form the jurisdiction of the non-formal education teacher.

Name of existing N.F.E. Centre	Name of villages to be attached
1. Mahabali	.. Kalamuguda
2. Kranja	.. Kanibhata
3. Saperi	.. Gambhari
4. Guchuka	.. Gidipadar
5. Kanibaru	.. Tulangpadi & Sipidikhol
6. Bhandarsala	.. Pairamal
7. Golampanga	.. ..
8. Pringala	.. ..
9. Nuamunda	.. ..
10. Lidranga	.. Sindhibali
11. Rajam	.. Paikapada
12. Muskasaru	.. ..

It is proposed to open 23 more Non-Formal Centres in the following villages. One non-formal teacher is to be appointed in each centre. The jurisdiction of each centre is indicated at the righthand side in addition to the village where the centre is located.

Name of the village (s)	which is included under the jurisdiction of the new Centre.
1. Ushabali	.. Sanguchuka
2. Dupi	.. ..
3. Gumma colony	.. Kalanguda & Bariguda
4. Pedam	.. Salpata
5. Pagerpadi	.. Nuamunda
6. Randanga	.. Jamuguda
7. Bhaluguda	.. Sukarpadar
8. Ambidikhol	.. Mandamaska, Karlangi, Guma
9. Tuakila	.. Santuakola, Sanakumudi
10. Germali	.. Dahabali
11. Batipada	.. Badakumudi, Gurlimaska
12. Sadangi	.. Girisasha
13. Gunusupax	.. Targabali, Adlangu
14. Dhumamaska	.. Mundimaska
15. Kranjikona	.. Srambuli
16. Bilamal	.. Garang
17. Rangaparu	.. Sembedapadar
18. Burlubaru	. Madalkona
19. Dharanimaska	.. Puskudi, Guibali
20. Dhudsi	.. Saperibata
21. Deogada	.. Jhalipada, Kusumunda
22. Belaghar	.. Kadayana, Mathaghati
23. Bikapanga	.. Muchidibaru

There are primary schools in Kineri, Pikusi and shushabhat. The enrolment of these schools is low. Under Operation Blackboard Scheme 2nd teachers are being provided to these schools. They will undertake the adult education activities of the concerned villages.

Under area specific approach the entire Project area will be under operation of adult education programme. Not a single village should remain unattended.

Follow-up programme for retention of literacy—Under the literacy programme the adult illiterates may be made literates within a period of two years. But they would lapse into illiteracy if they are not regularly exposed to the reading materials. Therefore, a follow-up programme will have to be organised for the neo-literates for retentions of literacy.

Government of India have developed a follow-up programme called "Jana Sikshyan Nilayam" for the neo-literates. According to their norms one Jana Sikshyan Nilayam is to be established in each Grama Panchayat. But that norm cannot be applied to the Kutia Kandha Project Area for two reasons—

(1) Only two panchayats cover the entire project area covering 300 sq. kms. and each panchayat has 38 to 40 villages. 40 villages cannot be covered by one Prerak of the Jana Sikshyan Nilayam,

(2) The villages are sparsed and surrounded with hills and terrains.

Note—Silkudi and Talangpadar villages will be attached to the nearest Adult Education Centres.

The modus operandi of the J. S. N.—A Jana Sikhayan Nilayam is to be established at the Grama Panchayat Headquarters which is to be housed preferably in the primary school building under the charge of a Prerak. The J. S. N. shall have a library containing specially designed books and magazines for the neo-literates. The Prerak goes out with books to a particular viliage which has already been covered under Adult Literacy Programme. The neo-literates are given books on loan at their village for about a week. The neo-literate are instructed to read the books magazines. At the week and the Prerak comes once more, takes the previous book/magazine and issues new books/magazines. Thus the system continues.

He is provided with a bicycle for his tour. He will also display the posters depicted on the development programmes on the walls of houses exposed to public view.

In order to serve the area conveniently it is proposed to have eight Jana Sikshyan Nilayams in the following central villages and cluster headquarters. The Prerak may be paid a remuneration of Rs. 750 per month.

The Jana Sikshyan Nilayams are to be opened in the year 1993-94. The first batch of illiterates are supposed to be made literates after two years whereafter the need for supply of literatares and magazines to the neo-literates will be required.

1. Batipada
2. Belghar
3. Bilamal
4. Dhumamaska
5. Germali
6. Guchuka
7. Gumma
8. Kanibaru

Motivation—A mobile audio-visual unit may be maintained by the Micro-Project, Belghar for motivating the people for adult education and through adult education about all the sectors of development, such as, Animal Husbandry, Health, Agriculture Horticulture, Preservation of environment, etc. The unit may have a specially designed 4 wheeled Cycle-Rickshaw, one 16 mm. Projector and a Generator set. One Operator, and two Rickshaw driver-*cum*-Helpers may be appointed. This unit should make programmes to go to all the villages in the evening for screening the films specially prepared with discourses in kui, the language of the Kutia Kandha.

Pre-primary education—The need and importance of pre-primary education has been explained in detail—Realising the crucial importance of rapid physical and mental growth during early childhood Government of India have started a number of programmes of eariy childhood care and education (E.C.C.E.) with the following objectives:—

(*i*) Preparation of children for primary school

(*ii*) Support service for girls in universalization of primary education

(*iii*) Support service for working women in low income groups

The total development of the young child in age-group 0—6 years with special emphasis on children belonging to under-privileged groups and first generation learners should be the overall objective of pre-primary education.

Contents—Being holistic in approach, E. C. C. is intended to attend all aspects of child's development. The content of E.C.C.E. in addition to the vital and central inputs of health care and nutrition is a programme of structuted and unstructured, play actiivties, play materials and learning experiences which promote the social emotional, mental, physical and aesthetic development of the child.

Target groups—Among others the target groups include—

(*i*) Ecologically deprived areas where children are required to fetch fuel, fodder, water and do other household chores.

(*ii*) Landless agricultural labourer

(*iii*) Forest dwellers and tribals in remote areas

The National Policy of Education, 1986 attached special importance on the E.C.C.E. Programme for the tribals of the interior areas.

It is gratifying to note that Government have opened nine Anganwadis and 12 Sub-centres of Anganwadi covering twenty-one villages. But all children of this primitive tribe should be brought under the Anganwadi Programme with increased importance on the education component of the Anganwadis.

Twenty-three new Anganwadis have been proposed to be opened bringing the total number to 44. The remaining 34 villages have been tagged to the existing or proposed Anganwadi centres in the following arrangement.

It is suggested that 23 new Anganwadis may be opened in the following villages. The name of the villages mentioned on the righthand side are tagged to the Anganwadis mentioned in the left column (both old and new).

Name of existing Anganwadis		Name of villages tagged to the existing Anganwadis
(1)		(2)
1, Gumma	..	Bariguda
2. Belghar	..	Kusumunda and Madalkana
3. Dupi	..	..
4, Pageripada	..	Salpata
5. Bilamal	...	..
6. Dhudsi	—	Saperibhata
7, Rangaparu	...	Sembedapadar
8. Kanibaru	—	Bhadrasal and Pairmal
9. Lidranga	—	Sindhibali

Name of Anganwadi Sub-centre (1)	Name of villages tagged to the sub-centres (2)
1. Burlubaru ..	...
2. Jhalipada ..	..
3. Deogada ...	...
4. Khadapanga ..	..
5. Batipada ...	Badakumudi
6. Bikapanga ...	Mandamaska, Ambidikhol and Muchedibaru
7. Kuchamunda ...	...
8. Guma Harijan Sahi ..	..
9. Nuamunda ..	..
10. Ushabali ...	Sanguchuka
11. Sushabhata ...	...
12. Guchaguda ..	..

Name of proposed Anganwadis (1)	Name of villages tagged to the Centre (2)
1. Guchuka ..	Tidipadar
2. Pikushi ..	..
3. Kalanguda ..	Pringel
4. Pedam ..	..
5. Bhaluguda ..	Sukarpadar
6, Golampanga ..	Tulangpadi
7. Kineri ..	Jamuguda
8. Randanga ..	...
9. Kranja ..	..
10. Saperi ...	Gambhari
11, Talangpadar ...	..
12. Kadapana ..	..
13. Tuakala ...	Santuakela and Sanakumudi
14. Germali ..	Dahabali
15. Gurlimaska ...	..
16. Gunusupa ..	Tarangbali and Adlangu
17. Rajam ...	Paikapada
18. Dhumamaska ...	Mundimaska
19. Kranjikana ..	Srambuli
20. Garang and Dhamanpanga	Karlangi
21. Dharanimaska ...	Puskudi and Guibali
22, Nahabal ..	..
23. Sadangi ..	Girisasa

A survey of the child population from birth to 6 age-group in each village should be made and the requisite feeding materials as per the child population may be given to the Anganwadi workers. Play materials, picture books, story books in pictures and other materials required for the Anganwadis should also be issued as per need. The Anganwadi workers may be required to work two days at the Headquarters and on the third day he may go to the tagged village, distribute the food materials and take up other programmes as per routine. He may entrust the village headman to distribute food during two days when she is to be at her Headquarters. That is how all the villages can be covered under the Anganwadi Scheme.

The play materials, picture books, feeding materials may be supplied by the Panchayati Raj Department. The remuneration of the Anganwadi workers may also be paid by the same Department as in case of the existing Anganwadis. Running the Anganwadis as per the programme suggested above shall be the responsibility of the Panchayati Raj Department.

Elementary Education—The Kutia Kandha Project, Belghar poses a peculiar problem for providing schooling facilities to children. The problem is that the villages are very small, so much so, that they do not come under any prescribed norm for opening of schools. According to the existing norms of the State Government, a tribal village having 200 or more population is eligible for opening a primary school if no such school has been established within 1km. distance from the village. In the entire Belghar project area there is only one Kutia Kandha village having more than 200 population and it has been provided with a primary school, of course there are non-kutia kandha villages in the project area having more than 200 population and all these villages have been provided with primary schools. Judged against the norms of State Government no other Kutia Kandha village justifies establishment of primary school.

Universallzation of elementary education is a constitutional directive. It is obligatory on the part of Govt. to (1) provide schooling facilities to all children in the 6— 14 age-group (2) ensure enrolment and retention of these children and (3) ensure attainment of the children. Taking the first phase of the programme, i. e., provision of schooling facilities it may be seen that there are 22 primary schools/stages distributed over the project area as shown in Table-1. These schools serve only 22 villages. The remaining 56 villages remain unserved by primary schools.

It is not possible to provide primary schools in all the 56 villages. There are 33 villages having less than 50 population. Total number of children of school-going age in these villages will be 3 to 5 each. In such cases opening of primary schools is not a feasible proposal. Providing low-cost hostels with provision for free fooding for the boarders in some of the centrally located primary schools and in some proposed primary schools is a solution of the low population problem. Some villages having more than 100 population may have extension schools. (Extension school when population of a village does not justify opening of primary school as per norms of Government one additional teacher is provided in the neighbouring primary school who is borne in the staff of the existing school but functions as a teacher of the new school which is considered as an extension of the old school.)

It is proposed to solve the problem of schooling facilities in the following manner;—

1. Providing low-cost hostels to four existing primary schools
2. Opening four primary schools with low-cost hostel facilities
3. Opening two primary schools without hostel facilities
4. Opening extension schools in three villages
5. Increasing the intake capacity of Sevashrams run by H. & T. W. Department.

(1) List of existing Schools where low-cost hostels are to be provided

Names of existing schools where low-cost hostels are to be provided (1)		Names of villages from where students are to be admitted (2)
1. Sushabhata Primary School	..	1. Saperi 2. Tidipadar 3. Gambhari 4. Pagerpadi 5. Salapata 6. Jamuguda
2. Germali Primary School	..	1. Tuakola 2. Sana Tuakola 3. Sana Kumudi 4. Bada Kumudi 5. Dahabali
3. Bijapanga Primary School	..	1. Mandamaska 2. Ambidikhol 3. Gumapadar 4. Karlangi
4. Dharanimaska Primary School	..	1. Dhumamaska 2. Mundimaska 3. Puskudi 4. Guibali

(2) List of new schools to be opened with low-cost hostels

Names of villages where Primary Schools to be opened with low-cost hostels (1)		Names of feeding villages (2)		
1. Kanibaru	—	1. Lidranga	..	75
		2. Golampanga	..	67
		3. Sipidikhol	..	23
		4. Tulangpadar	..	58
		5. Bhandarsal	..	17
		6. Pairamal	..	15
		7. Sindhibali		33
		8. Bhaluguda		60
		9. Sukerpadar	..	28
		Tatal	..	376

Names of villages where Primary Schools to be opened with low-cost hostels (1)		Names of feeding villages (2)		
2. Padam	..	1. Kanibhata	..	4
		2. Nuamunda	..	91
		3. Padam	..	89
		4. Kranja	..	67
		5. Bariguda	...	24
		Total	..	275
3. Sadangi	..	1. Sadangi	..	57
		2. Girisasa	..	44
		3. Sembeda Padar	..	35
		4. Gunusupa	..	70
		5. Targabali	..	45
		Total	..	251
4. Kranjikana	..	1. Kranjikana	..	84
		2. Srambuli	..	21
		3. Muchadibaru	...	31
		Total	..	136

(3) List of villages where Primary Schools are to be opened without hostel

1. Rajam	1. Rajam
	2. Paikapada
2. Ushabali	1. Ushabali
	2. Sanguchuka

(4) List of villages where extension schools are to be opened

Names of villages where extension school is to be opend		Names of the existing schools to which to be attached
1. Kadapana	..	Belghar Primary School
2. Saperibhata	..	Dhudusi U.G.M.E. School
3. Kranja	..	Randanga Primary School

(5) The intake capacity of Belghar Residential Sevashram should be increased to take the children of Kusumunda and Madalkana which are situated at a distance of only one to two Kilometres from Belghar.

The above arrangements will cover all the villages small and big as far as provision of schooling facilities both directly and through hostels is concerned, But there are apprehensions that those villages which have not been provided with schools may not send their children to schools where low-cost hostel facilities are provided. Some of them would not be interested to give education to their children in hostels and others would like to engage their children in economic endeavours rather sending them to hostels which thrusts on them the responsibility of taking them to hostels and bringing them from hostels at intervals. In order to undo this a strong motivation would be necessary. The teachers of the school should have the responsibility of enrolling the children of the tagged villages.

Enrolment—The problems of enrolment and regular attendance of students are the crux of the issue. It is a matter of consolation that 54 per cent of the schools going children have been admitted. There may be some over reporting in case of enrolment, yet the over all enrolment minus the over reports is not unsatisfactory. But it has been observed during spot visit that attendance in some schools where the teachers were present was poor. Schools where teacher were absent attendance was naturally nil.

The drop out position in primary schools has been made clear in the discussions made earlier. The drop-outs being 77·9 per cent at Class V stage is a matter of grave concern.

The causes of unsatisfactory enrolment and high drop out are mainly economic. Yet some other factors are also equally responsible for such a plight. Among many causes the following are considered to be crucial :—

(1) *Lack of parental education*: Almost all the children would be first generation learnes. Parents are not interested in sending their children to schools.

(2) *Lack of interest of children in schools*—Children do not find any attraction in the schools. The curriculum is almost foreign to their culture. The language of study and discourse are hardly understood by them. The school building, the teacher, the curriculum are not attractive for the children.

(3) *Teacher absenteism*—In many schools teachers remain continuously absent for months together which discontrnues the school attendance habits of children.

(4) School-going children are very often engaged in baby sitting work.

(5) Non-provision of schooling facilities is one of the chief causes of drop-out. Provision of incomplete schools, i. e., up to Class III forces children to drop-out after Class-III.

(6) *Unsuitable vacation vattern* : It is seen that the vocations are not adjusted to the tribal festivals. As a result students run away home when the festivals occur at the cost of studies. Recurrance of such occasions leads to drop-out.

(7) *Unsuitable school timing*—School timings are not adjusted to the professional pattern and working hours of the locality. Had this adjustment been made, a child could have help his parents in his work and at the time attends school.

(8) Lack of supervision of the schools leads to many complications. Teachers are not keen in teaching the students and making progress in the school. The students after attending for some days lose interest when no teaching learning activity takes place.

In order to overcome these difficulties, particularly the economic ones regular feeding programme has to be introduced and regularly conducted to provide incentives to students. Mid-day meals are strong incentives for enrolment and regular attendance of students. It is learnt that Mid-day meals are served only in ten schools out of 20. Even these ten schools do not provide mid-day meals regularly.

Anganwadis should be attached to primary schools where pre-school education would be taken up during the working hours of the school, so that smaller children could be left under the charge of the Anganwadi worker and the older child of the same family may be in the school. Those girls or boys who are engaged in baby-sitting could attend schools if Anganwadi is run in the school itself.

Recruitment of teachers should be carefully made. Those local candidates who are conversant with the local dialect and have commitment and sincerity to profession should be recruited on priority basis if they possess required academic and training qualification. Strong action should be taken against the absentee teachers who are mainly responsible for closure of schools for longer periods.

Curriculum revision should form a part of the action plan. The local inspecting officers and higher authorities at district level have never suggested any measures for revision of curriculum. Incorporation of local tribal culture in the text books, development of bilingual primers for Classes I and II would go a long way in developing interest of children in schools. The S.C.E.R.T. had developed some bilingual primers in 'Kui' in the past. But those primers do not seen to have been introduced. Liasion may be made with the State Council of Educational Research and Training for the primers in this project area.

An orientation programme may be conducted by the H. & T. W, Department for all the teachers working in tribal areas in the local tribal culture and language. This Orientation course may be organised on regional basis. The schools situated in the area dominated by a particular tribe should be taken at a time. Such orientation in tribal culture and language could remove communication gap.

Improvement of Supervision—Education Department of Government of Orissa has created 377 posts of Sub-Inspectors of Schools. At least two Sub-Inspector have been provided to every Block. Out of the two Sub-Inspectors of Tumudibandh Block one may be posted at Belghar. The Headquarters of the Second S. I. of Schools Tumudibandh may be fixed at Belghar. Posting of one S. I. of Schools for the Belghar project with Headquarters at Belghar would improve the supervision to a great extent.

In fact lack of supervision is the weakest point of educational administration of the tribal areas, particularly in Kutia Kandha area. Teacher absenteeism is an immediate effect of lack of supervision. In some cases, teachers remain absent from duty in the knowledge of the Sub-Inspectors of Schools concerned. Unholy alliance between the teachers and S. I. of Schools is a matter of suspicion. Authorities of Education Department at district and circle levels are not keen in preventing teacher-absenteism. It is surprising to note that in spite of several requests of the Education Department to the Revenue Administration to look at the teacher's attendance of Primary Schools while they are on normal tour and report for action, no good result has been obtained.

It is expected that the Special Officer of K. K. D. A., Belghar can play an important role in checking teacher absenteism, since he is touring over the area almost daily, he is in a position to supervise the activities of the S.-I. of Schools. It is proposed to place the services of the S. I. of Schools, Belghar at the disposal of the Special Officer, Belghar including payment of his salary. The un-co-ordinated action has not generated any good result so far. This type of co-ordination may be tried with the concurrence of Government in the Education Department.

Non-formal Education—There are twelve non-formal education centres in the Belghar project area. All these centres have been opened in villages having no schools. The non-formal teachers are taking care of primary education of the children of school-going age of such schools in these villages. Twenty-three more non-formal education centres have been proposed to be opened during the coming two years under the adult education scheme. The old and new non-formal education teachers are to take care of younger children in the forenoon and take up adult education programmes in the afternoon and evening. Their monthly remuneration has been proposed to be raised to Rs. 750 per month.

No more posts are to be created under non-formal education sector. But one post of Supervisor may be created to supervise the work of non-formal teachers whose number will be come to 35. The Supervisor should be a trained graduate. He may be paid a consolidated remuneration of Rs. 2,500 per month. The post may be created after the non-formal teacher posts are filled up in 1992-93. He is to supervise the adult education as well as non-formal education centres.

M. E. School—There is one Ashram School of M. E. standard, one Upgraded M. E. School and one M. E. School section in the Government High School Belghar. This provision is too inadequate for the population of Belghar project area which stood at 7,475 in 1990. Non-provision of M. E. School facilities within easy walking distance has resulted in high rate of drop outs.

As per State Government norms an area having a population of 1,200 and having no M. E. School facilities within a radius of three Kms, justifies opening of an M. E. school. The peculliarity of this area is that a population of 7,475 is distributed over 300 square Kilometers. The density of population is 25 per square kilometre.

The villages are too small and far away from one another. Two villages cannot be tagged together to attend a school because of the terrain. Under such a circumstance the only way out is to provide hostel facilities in the M. E. Schools with free fooding and lodging arrangements.

As per the norms prescribed by the Kothari Commission there should be one M. E. school for three primary schools. Government of India, in the working group recommendations for the Eighth Plan have suggested one M. E. School for 2 primary schools. Even if the recommendations of Kothari Commission are accepted there would be a need for 10 M. E. Schools in the project area. Since there are 22 primary schools in existence and eight more are proposed to be opened.

Taking the present enrolment level and the level of development of the villages, there is no scope for opening 7 more M. E. Schools in addition to the existing three. It is, therefore, proposed that four M. E. Schools may be opened during the Eighth Plan period, one M. E. School per year. The villages where M. E. Schools are to be opened are :—

1. Bilamal ... 1991-92
2. Batipada ... 1992-93
3. Rangaparu .. 1993-94
4. Kanibaru .. 1994-95

After assessing the progress of education enrolment retention etc. 3 more M. E. Schools may be established in the following three villages during the IX plan period:—

1. Dharanimaska
2. Sudhabhata
3. Kineri

It is important to note that the norm for providing M. E. School education within three Kms. from the home of the child cannot be satisfied in this project area which covers 300 square Kms. with a populaton of 7,475 spread over 78 villages wide apart from each other. But provision of low-cost hostels in the schools will remove the difficulties of covering longer distances through the terrain.

Secondary Education—There is one Government High School at project Headquarters, Belghar to serve the entire population of the project. Detailed discussions have been made earlier about the high school and its facilities and problems. No recommendation can be made to establish the second or third high school in near future. Since the outturn of the outskirting M. E. Schools is not satisfactory another high school may not be immediately necessary. But with increase in the primary schools, upgrardation of the other primary schools to upper primary standard, establishment of one more M. E. Schools, the number of students requiring admission in class VIII will increase. The new M. E. schools will be established during the year 1992-93 and 1993-94. There will be a need to upgrade Gumma Ashram school to High school standard during 1995-96. Advance steps may be taken to construct buildings for the High school to be opened in 1995-96.

Bilamal is another populated growth centre having a population of 818. It is surrounded by 17 villages. An M. E. School has been proposed to be opened here during the year 1992-93. Ultimately there will arise a necessity for establishing a High school at Bilamal during the 9th Plan period.

Ultimately these three High schools existing one at Belghar and proposed two at Gumma and Bilamal will meet the secondary education need of the entire Belghar Project area. The proposed High schools should be fully residential schools as the existing one.

Execution of the Plan—Unit costs for establishment of Primary schools, M. E. schools, Adult and Non-formal Education centres, Anganwadis and low-cost hostels are tentatively estimated to indicate the broad parameters and approximate cost of establishing institutions. The estimates are likely to vary in pursuance of the variation in price levels.

5·1. SUMMARY

Basing on the diagnostic criteria, like pre-agricultural level of technology, low literacy, diminishing or near stagnant population, seclusion and archaic mode of living, etc. a number of tribal groups have been identified as primitive during the Fifth-Five Year Plan and brought within the ambit of all round development through Micro-Projects. As such in Orissa State 12 primitive tribal groups have been identified and 15 Micro-Projects are now in operation in different tribal pockets. The Kutia Kandha Development Agency, Belghar in Baliguda ITDA of Phulbani district is one such Micro-Projects. The Agency has launched multifarious development schemes under income generating schemes and infrastructural development programmes for the Kutia Kandhas of Belghar and Gumma Panchayats in Tumudibandh Block.

It was found that the development programmes so far implemented during last one decade did not bring sustainable economic uplift and socio-cultural development to a desired extent. Rather problems like disequilibrium in the ecology, indiscriminate management of the natural resources and exploitation of human resources emerged. Keeping in view the urgent problems and objectives of the project it was considered necessary to prepare a Handbook on development based on Techno-economic Survey and Action Plan formulation. For this assignment Project Consultants having specialisation, experience and expertise in their respective fields of various sectors were associated in the task of formulating need-based holistic development plan for the Kutia Kandhas. The Project Consultants from various fields like Forests, Soil Conservation, Agriculture, Horticulture, Irrigation, Animal Husbandry, Health, Public Health and Sanitation, Communication and Education visited the study area to gather first hand knowledge, met the tribal

people in their villages, collected information connected with development programmes and its impact and implication. They also interacted with officials and development practitioners working in the field at different levels. Apart from these, data were collected about the life style of the Kutia Kandhas putting emphasis on their social organisation, value system, ethos and ideologies, world views, socio-cultural pattern, customary law and leadership pattern. In the process anthropologists, administrators, development practitioners and the Project Consultants were involved to find out suitale and feasible programmes with people-centred approach.

The total geographical area is estimated to be around 300 sq. kms. which lies between 19°45' and 20°5' N latitude and between 83°30' and 83°45'E longitude on the North-East fringe of the Eastern Ghat. Out of the total number of 70 villages and 12 hamlets two villages are uninhabited. As per the report of the Kutia Kandha Development Agency a total number of 4,090 Kutia Kandhas live in 1,025 households of 68 inhabited villages in 1990. The sex ratio was 1,038 females for 1,000 males. Percentage of literacy as per 1991 survey found to be 7·92. In their habitation and settlement pattern they still follow the traditional mode of selection of site. unique construction designs and placement of functional areas. Association of magico-religious rites and co-operative efforts by the neighbour in the construction of houses are noteworthy. In each village there is a dormitory. The economic life of the Kutia Kandhas is influenced by and developed in the lap of nature. They make best use of land and forest to derive their livelihood as the main source and also for materials for house construction, medicine and several others. They practise extensively slash and burn type of rotation cultivation locally known as 'Nela' cultivation. They also cultivate wet land in whatever quanity is available. A few Kutia Kandhas possess this type of land. Due to enforcement of new forest policy the Kutia Kandha's forest economy has been disturbed a lot. They have a rich heritage of material culture specifically dress and ornaments, agricultural instruments, musical instruments, hunting weapons, households materials, utensils and containers, basketry, etc. Presently they are confronted with economic hardship as a result of which they go to the local Scheduled Caste money-lenders for loan. In such cases they are exploited frequently. The prime causes of their economic hardship are their system of high bride price, expensive feasts and festivals as well as magico-religious performances, multifarious social obligations, natural calamities and divine order put them into economic hazards. The Kutia Kandhas are known for their co-operative labour force, group life, division of labour, mutual obligation and feeling of oneness. Family, lineage and clan among them play vital role in maintaining unity and solidarity. Their traditional leaders play a vital role in guiding the people in several socio-polical matters. The secular heads and magico-religious heads have some role to play in dealing with customary law. From birth to death a Kutia Kandha comes across many ups and downs. According to sex and age they develop their personality. Marriage is regarded a sacred institution. The normal types of marriage are by negotiation and capture. However, marriage by mutual consent, exchange and intrusion are also recorded. But ritualistic observances are followed in different types of marriage. The female adults shoulder the major responsibility of the family but the male members also co-operate in various socio-economic affairs. Religion is found to be their hard-core of life, magico-religious rites along with feasts are aimed at appeasing spirits' multifarious gods and goddesses.

The pattern of informal education which is prevalent is quite different from the formal schooling. They value freedom, happiness, merrymaking and enjoyment. They acquire knowledge which is useful for their survival. Their main source of ncome is shifting cuitivation. Besides they depend on forest collection, wetland cultivation and wage earning. They domesticate animals and birds mostly for sacrificial purpose. As per the recant survey the total annual income of a Kutia Kondh household comes to Rs. 3,845 at current price. The annual household expenditure comes to Rs. 4,367.

The agency area is full of virgin forest although devastation in several pockets has been caused due to continuous practice of shifting cultivation. More than three-fourth of the total area is under forest coverage which are categorised as reserved forest, proposed reserved forest and other categories of forests. The forest produces like timber, firewood, bamboo, kendu leaves, sal seeds, sial leaves and fibre, tamarind, mahua flower and fruits, broom stock, etc., are collected for own use or sale. The area is also rich in wild life. According to the Forest department, 17 per cent of the forest area is seriously affected by Podu. The Podu cultivation has adverse effect on the forest and environment. As per the Project Consultant (Forest) the Kutia Kandhas are continuing the practice of shifting cultivation out of sheer compulsion. Non-tribals living in the area are also responsible for devastation of forest in the agency area. The Kutia Kandhas are lover of forest and they are now quite aware of the pernicious practice of shifting cultivation. They are in search of suitable alternatives for Podu. It has been suggested to introduce sloping Agricultural land technology, low cost dependable schemes against shifting cultivation and method for restoration of environment.

Physiographically the terrain is undulating with anticlin folds and synclinal valley intersected by narrow drainage channels. The rocks are all of igneous and metamorphic type. According to the topography, physical condition, present land use, the whole area can be divided into hill, hill-slopes, pediments and valley. The drainage pattern of the area is dendritic. The climate is warm, humid sub-tropical. There are five different soil series found in the area—Susabata series, Deogarh series, Belghar series and Gumma-I series and Gumma-II series. The land capability classification of the area shows that there are Class I to Class VIII categories of land which are suitable for agriculture, horticulture, plantation, pasture, wild life protection, etc., according to their respective quality. The average annual rainfall in the project area is 1,360 mm. Out of the total volume of water received 42·3 per cent is available as run-off, the balance is either seeped in to the soil or lost in evaporation. About 54 per cent of the water remains in the top layer and contributes to the soil moisture which is responsible for the growth of vegetation and the balance is ground water. There is little scope for minor or medium irrigation project. Hence small water harvesting structures can be constructed Keeping in view the requirement of foodgrains, pulses, oil-seeds, fuel.wood, fodder in the areas soil and water resources potentiality can be favourably managed. Major problems connected with soil are associated with shifting cultivation, waste-land, gully eorsion, stream bank erosion, undulating and sloppy land, soil acidity, lack of irrigation, lack of adoption of dry farming technique and *in situ* water management, incompletion of land settlement in the area, and diversion of land for creating new reserve forests. The gross erosion rate from the project area because of rolling and undulating terrains causes serious wastege to the surface soil. The slope is 10—15 per cent and Mahanadi and Vansadhara catchments allow direct discharge of soil to the Bay of Bengal. It is suggested that the work should be executed on watershed basis. Soil conservation measures like land development, gully control. water harvesting structures, stream bank erosion control, diversion bunds, sisal plantation, jhola land protection, miscellaneous plantations, conservation farming demonstration and limiting of acid soil have also been suggested. Training of farmers in land development and water management and organising Bhumi Rakshya Mela may encourage the inhabitants for better efforts. Phasing of the programme of works, involvement of the people and suppervision on the chain reaction and impact on the environment are to be emphasised for successful result.

In the agency area there are two distinct cropping seasons, namely Kharif and Rabi in which paddy, millets, maize, ragi, jawar, pulses, oil-seeds are grown. Paddy is taken a monoculture crop and in a very limited extent grown as double crop. Keeping in view the age-old agricultural practices, impact of agricultural development programmes

in the area requirement of foodgrains, requirement of pulses, oil-seeds, etc., an action plan for Agricultural development from 1991—1996 has been suggested. It proposes rice development programmes, prevention of shifting cultivation, training of farm families, agricultural implement distribution, and availability programmes, and infrastuctural development programmes. The development of the Kutia Kandhas will be possible through development of the agriculture programme. It may be implemented as the core programme in the agency area for the Kutia Kandhas.

In the agency area there is ample scope for the development of horticulture. The annual requirement of vegetable in the area which comes to about 841 M. T. can easily be produced in the existing resources potential provided the people are rightly motivated. For this, vegetables and spices demonstrations may be conducted in all villages in their respective growing seasons. By and large, all the Kutia Kandhas have great affinity towards fruit trees. This programme may be introduced extensively as the alternative to the ongoing practice of shifting cultivation. During recent past mixed orchards of mango, jack fruits, lichi, lemon, orarge and guava have been established over an area of 47 hectares which should be maintained properly for better result. Kutia Kandha Development Agency has spent Rs. 5·39 lakhs from the Micro Project fund and Rs. 22·28 lakhs from Podu prevention scheme over an area of 176 hectares which is partially successful. New orchards may be developed in the revenue land, proposed forest area and community land adjacent to the village Insitu and graft plantain across the slope can solve several proposes. Not only scientific methods will be followed for plantation and maintenance but also necessary protection measure may be taken against stray cattle and jungle fire. This surplus fruits may be marketed by forming a Co-operative Society. It has been proposed to complete 1,200 hectares of fruit tree plantations and cover 210 hectares under vegetable crops with special emphasis on short duration fruit tree.

The area is full of perennial streams. Keeping in view the irrigation potentiality and technical feasibility, minor irrigation and lift irrigation will be more suitable to solve the problem of irrigation for better agricultural production. Of the minor irrigation projects there is scope for construction of reservoirs, diversion weirs, improvement of existing M. I. Projects and renovation of derilect or partially demaged projects. Lift Irrigation Projects can be installed at different points in several villages having perennial streams nearby. There is scope to provide irrigation facility to 1,600 hectares of land which may be investigeted by Minor Irrigation and Lift Irrigation Departments for the preparation of plans and estimates and further action.

The Kutia Kandhas are very much fond of domesticated animals and birds. They rear buffalo, cow, sheep, goat, pig and poultry birds. The statistics of animals and birds in the Belghar area is quite admirable. The tribal people have also been provided with animals and birds for their socio-economic prosperity. But diseases like debility, anoerexia, septic wound, conjuctivity, sprain, haemorrhagi-septicaemia etc. stand as a bar to the growth of cattle wealth. Due to inadequacy of animal health care facilities in the area the tribal people are put into great loss due to sdoradic occurrences of epildemic diseases. Other than the grazing green forest no other provision are found for survival and better health care of the animals. The birds specially chicken depend on the worms and grains available outside. The services rendered by the veterinary staff in the area is not satisfactory. Hence, not only the cattle owned by the people but also supplied to the beneficiaries are dyling in epidemics. The Kutia Kandhas need plough bullocks for cultivation and other animals and birds they need for feasts and festivals. Hence, considering the felt-need of the people animal husbandry programme can very successful as a partial remedy against shifting cultivation too. Keeping in view the geographical situation and interest of the people the agency area can be divided into 6 cluster areas for development of animal husbandary programme. Each cluster should be well-equipped with adequate veterinary staff, materials and infrastructural facilities. Apart from this mobile treatment-*cum*-motivation units may be developed to keep watch over animal husbandry

programmes and natural calamities. Fodder resources should be developed alongwith improvement in dairy development scheme. Species like Subabul, Sisu, Arjan Kanchan, Gohira, Dhalasiria etc., may, be planted to provide fodder to the animals. Piggery scheme has ample scope in the area which can provide sufficient animal protein and bring economic development of the people. So also the poultry scheme and broiler poultry farming can be economically viable in case of landless unemployed youths. There is feasibility of duckery scheme in the area. However, clusterwise training programmes will be of much use for success of different programmes.

Since 1961 some sort of medical provision has been provided for the people of Belghar area by the Harijan and Tribal Welfare Department. Subsequently this hospital was taken over by the Health Department in the year 1978. At present Government of Orissa in Health Department is providing some funds and so also the Micro Project is giving some help in the form of medicine for the Kutia Kandha patients. Even after a lot of pursuation from different corners the tribal people in the area depending on magico-religious rites and sacrifice of animals and birds. The herbal medicineman, magician and sorcerers are very powerful in this regard. Personal hygienic condition of the people is very poor and malaria is a persistent problem. Annual parasite index of Tumudibandh Block varies from 55 to 114. Other regular diseases are skin diseases, diarrhoea, leprosy and tuberculesis. Problem of drinking water is rampant in the rainy season. At present people use water of tube well, well, cistern, tank and stream for drinking purpose. With regard to food items calorie intake is not adequate. Most of the children suffer from malnutrition and portein and vitamin dificiency. Immunisation and maternal services are also not satisfactory. Infant mortality rate is as high as 173 and people do not have much idea about health care facilities. It has been proposed to have a six-bedded Hospita at Belghar. Special programmes likes control of malaria, skin diseases, T. B., Leprosy etc. may be introduced for health care of the people of Belghar. The Kutia Kandha area is faciliated with 58 tube-wells out of which 6 were defunct. But in many villages these wells are not used for drinking water purpose. The people here are not aware of personal hygiene. The people should be trained in construction and house planning unit should be created to follow the traditional architectural design and house pattern. Water-supply through pipes may be implemented in some villages.

The Kutia Kandha Development Agency, Belghar area is not well connected with all-weather road. At present all over the area 110·75 Kms. of roads exist out of which 51 Kms. have been constructed by the project division under N. H. The rest 60 Kms. are earthen roads so to say fair-weather roads. Road net-work is there for 20 villages and Tumudibandh-Belghar road is a ghat road which is connected with earthen road upto Ambadola in Muniguda Block of Koraput district. Keeping in view inadequacy of communication provision it has been suggested to allocate funds to different departments working in this line for implementation of road work programmes.

In respect of education, the Kutia Kandha Development Agency, Belghar area is comparatively very backward. Keeping in view the size of population and number of school going chiidren' establishment of schools cannot be viable as per the norms of the Education Department. No adult education programme is in operation in the area inspite of its ample scope. The total literacy percentage as per the last Census. 1991 conducted recently is found 12·6 but in case of the females it is 3·32 only. No initatives from the parents side as noticed for development of their children in the educational field. There are Anganwadi Centres organising feeding programmes for the children. Pre-primary centre in the name of Seva Bharati is also functioning. The meagre number of educational institutions are not having either school building or residential quarters for the teachers. In several schools the teachers are remaining absent and single teacher schools are found almost defunct.

The enrolment in schools is calculated to be 25 per cent of the child population. There are large number of drop outs from the schools. In many of the schools reading and writing materials have not been supplied or those are physically not available. Belghar residential Sevashram needs special attention as regards facilities and mode of operation, so also Dhudusi U. G. M. E. School, Guma Ashram School and M. E. Section of Government High School, Belghar. Problems in general and specific, like building, teachers strength, attendance and enrolment are striking. The percentage of success and failure is uneven and it may be due to either weakness of the students and their parents of negligence of the teachers. In the hostel the students also face problems of health, light, boarding and many others. The Kutia Kandha Development Agency has not given due importance to the development of education in the area. From several angle the achievements in the field of educational development seems to be inadequate.

For successful implementation of educational development in the area traditional leaders and territorial authoritarianship may be taken into consideration. The youth organisations and customary practices can be of much use to develop literacy percentage. The cluster approach for successful administration and achievment for educational development may be most suitable in the existing geographical and cultural background of the people. Entire area can be broadly divided in to six clusters for smooth management. It has also been suggested to take up adult education programme extensively in the area particularly for women, landless labourer,s marginal and small farmers. Apart from this the number of nonformal education centres may be increased from 12 to 35 and Jana Sikshya Nilayam provisions may be facilitated in the area. Other suggested approaches for development of education in the Belghar area are to organise motivation camps and mobile audio-visual units in connection with all sectors of development. Special emphasis is needed on development of primary education, elementary education, preparation of primers and syllabi, enrolment campaign, improvement, in supervision by higher authorities of the department. opening of new and more educational institutions and allocation of more funds in education sector for Kutia Kandha Development Agency, Belghar. Single line administration in this sector may accelerate the process and achieve the desired goal for the target group. However, it should be done in the joint efforts of the Education and H. & T. W. Departments.

The financial implication for different sectors of development proposed and discussed elsewhere are mentioned below—

Sl. No. (1)	Proposed programme (2)	Amount required (in Rs.) (3)
1	Forests	7,05,000
2	Soil Conservation	1,72,48,000
3	Agriculture	23,10,998
4	Horticulture	41,24,400
5	Irrigation	1,92,00,000
6	Animal Husbandry	16,10,650
7	Health	15,98,500
8	Public Health and Sanitation	3,96,00,000
9	Communication	
10	Education	77,32,150
	Total	9,41.29,698

For implementation of different programmes for all-round development a sum of Rs. 9,41,29,698 will be the total requirement. In the first year Rs. 1,89,49,357 and second year Rs. 2,63,24,957 have been ear-marked. During the third year and fourth year a sum of Rs. 2,71,67,217 and Rs. 2,16,88,167 will be needed.

5·2. GROWTH POSITIVE, GROWTH NEUTRAL AND GROWTH NEGATIVE VALUES

As in other tribal societies, among the Kutia Kandhas, development is related to the environment, society and culture. Their knowledge, practices and endeavour have direct impact on the life-style, innovations and change in the social system and total way of life. Economic upliftment and growth in broader perspective are interlinked with their natural and human resources. From the preceding discussions it is clear that action, behaviour, attitude, aspiration and *modus operandi* directly or indirectly determine the future growth and development. Several organizational pattern and arrangement of functional, socio-cultural traits in their social net work accelerate or impede the development and change. Mode of co-operation among the group and contribution of individuals in several activities could be considered meaningful in the context of socio-economic upliftment. There are traits, values, practices and cultural pattern that may enhance or discard development process. The traditional mores and values which are congenial are considered as growth positive but there are certain practices which set back the development process could be treated as growth negative. The traits in the cultural system are neither beneficial nor detrimental as such but fulfils both the ends according to the necessity, can be termed as growth neutral. While approaching for development of the Kutia Kandhas, backward or developed, factors mentioned above may be taken care of.

The society and culture of the Kutia Kandhas are associated with land and spirit in one form or other. They do not want to make the life tidious and troublesome. They work very hard and also enjoy up to possible extent according to the socio-cultural sanctions. Everything they leave upon the desire of deities and spirits. They want to fulfil their minimum needs by satisfying their numerous deities. The Kutia Kandhas love freedom and happiness. Life is understood as gift of God and meant for enjoyment and some of them express that life is to enjoy. Enjoyment as per their understanding is not only merrymaking but also performance of all the socio-cultural functions earmarked as per age, sex, status and divine order. Working in the field and forest is as important as dance and music. Saving and future provision are less important. Serving kinsmen and tribesmen are almost equal and to work for ownself and fellowmen are quite same. In no case idleness or jealousy can be tolerated either by the community men or spirit world. They believe in co-operation than competition. New innovations, provided they are not contrary to their values and traditions, are accepted. Since they are tradition bound and inward looking, they quite naturally like to retain their traditional traits which were functional for their survival over years. They would like to redesign some new traits with necessary modifications and reject others which are considered distunctional.

Religion forms the hard core of their culture is involved in every aspect of their day-to-day life and socio-cultural practices. They can sacrify everything in the world for the upkeep of their religious values. They apprehend sorcery and witchraft as dreadful and miscreant's action is watched and seriously dealt with. Disease and death are believed as causes due to dissatisfaction of certain spirits and deities. They have their own perception of good and evil, virtues and vices, happiness and sorrow and contemplation of human role in the world. They have certain preconceived ideas which are inherited from generation to generation with some changes. The Earth Goddess "Dhrani Penu" is considered most powerful and needs human blood for propitiation and if dissatisfied health and happiness in the family, village and area cannot be maintained smoothly. Ritual observances and several practices connected with it are performed in order to maintain the socio-economic status and eco-cultural balance. Whatever type of social function or festive accasion it may be drinking of liquor and consumption of non-vegetarian food are compulsory and guests are entertained properly. One may borrow with high rate of interest but cannot defer any function and social formality which are considered essential. More the guest and outsiders participate, the more they rejoice and feel elevated. Their hospitality and extravagancy in the Meriah sacrifice and

some important socio-cultural functions deserve special mention. All the kiths and kins, guests, friends and others also have happy get together in almost all expensive festivals. The Kutia Kandhas become indebted and economically backward. But this status oriented expensive functions are deeply rooted in community and culture of the people. Whatever may be the ways and means, the expenditure on rituals and ceremonial observances become imperative and unavoidable.

The Kutia Kandah believe in customary law and obey their traditional leaders with devotion and sincerity. The elites and leaders have their role to play in all politico-jural matters. Their role within the village and territory cannot be over-ruled. Order and decisions of the village council are treated as divine orders. A culprit may be excommunicated or punished with fine in cash or kind or both. Exoneration and readmission after ostracization are followed by a community dinner with drinks and the purpose is to curb deviant behaviour for conforming norms. Traditionally the Kutia Kandhas are terribly afraid of their anti-social deeds and divine punishment. Very rarely one commits crimes, with free will. Even for minor crimes, they resort to remedial measures immediately because of the fear of divine vegeance. An understanding of the typology and levels of leadership and of the specific rules are essentially vital. The ethos and world view of the people and their aspirations influence directly/indirectely their attempts at achievements.

The Kutia Kandhas depend on forest for multifarious socio-economic purposes. Their knowledge of forest management and exploitation of natural resources are intended to balance the ecosystem. They are already conscious of the rational exploitation of forest resources and regeneration of forest. The *Bagad* or locally known as *'Nela'* provides means for their survival. The rational method adopted and traditional skill employed to fight against calamities and destructive forces reveal their adaptibility. Their folk knowledge of land and soil management is very reasonable. Their traditional attachment to land and forest need deep consideration while granting formal recognization of the State. Besides, they have very rich material culture and if developed will perpetuate the art and crafts in their society. If freedom from exploitation and guarantee of social justice are most desirable objectives, the efforts for development are to be accordingly turned up. Their socio-economic interaction with the neighbouring ethnic groups and especially with the Pano are construed as 'symbiotic' by some and exploitative by others.

The Kutia Kandha women are not only very hard working and good econmic assets but also play major role in the smooth management of the family. There is gender specific division of labour with social approvals and the mutual understanding of sexes. In development intervention of the Kutia women can never be lost sight of. All the socio-economic activities are directly or indirectly associated with kinship ties and codes of conduct. Although husband in the community command superior position but in multifarious social, economic and other activities wife plays vital role. On experimental basis she could be identified as an intended beneficiary for development. The lineage men and inhabitants of the settlement interact in several social, economic, religious, political and communal festivals. Each Kutia Kandha village is a self-contained unit and villagers are very much conscious of the rich haritage of their place of birth.

The Kutia Kandhas are very informal in learning. They know a lot about the merits of their culture and environment. Their traditional technology and its use for management of the resources available could be useful for the development practitioners to introduce new innovations. Their traditional method of learning is the outcome of the informal process of socialization and prevailing training pattern. Moral teachings, special training and other expetiences are gained from the community men having expertise acquired by virtue of their own interest and endeavour. They learn what they need and that would be beneficial for their survival. But whatever they know with all details and respond to any question. We cannot assess their enculturation and education in the modern parameters of formal education. They believe in seeing than

hearing hence demonstration and field training would be of more practically useful. The Kutia Kandhas have very rich folk traditions and folklore which can be oriented in training processes. Very rarely they use other languages, specially Oriya than 'Kui' dialect. Any idea and knowledge transmitted through their own dialect gives immediate and fruitful result. They get insight into the idea and participate when conveyed through communication in their own dialect and cultural style. If sincerity of the trained teachers having knowledge in their dialect and culture is ensured in the area, positive results can be expected. The virgin mind and desire for learning of the children in Kutia Kandha area would achieve the best, provided above facts are emphasized at the time of imparting education. Educational development among the adults could be interlinked with multifarious developmeat programmes.

The human resources development need participatory approach in taking the Kutia Kandha women into the niche. All other experts and functionaries of the community; given little training could render their services to the people in best possible way. The development of the Kutia Kandhas would be easier if the people fully realise the intended benefit that would accumulate in the induced change through development effort.

The resistance among the Kutia Kandha can be expected when programme of change touches the sensitive areas of their belief system. The deep rooted traditional practices may act as barriers in course of the implementation of programmes of health and hygiene, because some diseases, like small-pox and diarrhoea etc. are believed to be caused due to evil spirits than health hazards. While plotting the felt needs in the development map care should be taken to avoid contradictions and conflicts.

The Jani, Mutha Majhi, Bejuni, Chhatia—have their respective roles which are inevitable. The modern politics has made inroad but traditional pattern has not lost its significance so far. At times juxtaposition results in ringing to surface conflicting situations. The Kutia Kandha values, such as co-operative efforts, community life, respect for elders, and the magicoreligious and secularheads are some positive aspects which could be tagged up with the development efforts. The innovative processes with necessary modifications would provide good fit accelerating the cause of develepment. It may be concluded that the Kutia Kandha values-growth positive, growth neutral end growth negative are to be recognised with good intention and appropriateness for successful implementation of development programmes.

5·3. FINANCIAL LEVER FOR DEVELOPMENT INTERVENTION

The technoeconomic survey conducted in the K. K. D. A. area in various sectors for sustainable development of the Kutia Kandhas has outlined the financial lever which is the most essential component of the development intervention. The financial lever incorporates the requirement of money grants spread over a period of four years (see abstract and its enclosers showing detailed requirements). The total requirement over a period of four years is estimated at Rs. 9,41, 29, 698 or say Rs. 9·41 crores. Out of the total requirement of money grants a sum of Rs. 1,89,49,357 or say Rs. 1·9 crores has been earmarked for the first year for implementation of various programmes in different sectors and it is 20·13% of the total requirement. Similarly in the second year the amount comes to Rs. 2,63,24,957 or say Rs. 2·63 crores which is 27·97% of the total requirement, The amount that is required for the third year is estimated at Rs. 2,71,67,217 or say Rs. 2·72 crores which is 28·86% of the total financial outlay. The concluding year that is the fourth year would require a sum of Rs. 2,16,88,167 or say Rs. 1·17 crores and it forms 23·94 per cent of the total requirement.

During the first year it is proposed to spend Rs. 5,95,667 which is 3·15 per cent of the total budget of the same year. A sum of Rs. 15,73,600 is earmarked for horticultural programmes and Rs. 39,90,000 for soil conservation measures which are 8·30 per cent and 21·06 per cent respectively. In the same year in the irrigation sector Rs. 48,00 000 that

is 25·33 per cent and for forest programmes Rs. 50,000 which is 0·26 per cent have been specified in the financial outlay. In case of the Animal Husbandry and health programmes a sum of Rs. 1,70,50 and Rs. 1,31,500 which are 0·09 per cent and 6·03 per cent respectively have been earmarked. For implementation of health programmes a sum of Rs. 1,31,500 that is 0·95 per cent shall be required. Maximum amount, out of the first year financial outlay, would be spent for communication, water-supply and sanitation. A sum of Rs. 66,00,000 that is 34·83 per cent of the first year budget has been proposed to spend for this programme. Only Rs. 11,41,540 which is 6·03 per cent has been specified for educational development. In the second year a sum of Rs. 5,71,777 that is 2·16 per cent has been earmarked for agricultural development. For execution of horticultural activities of the same year total requirement would be Rs. 10,53,600 which is 4·03 per cent of the second year financial outlay. Other programmes such as soil conservation, irrigation, forest, animal husbandry, health, education and communication, water supply and sanitation are to be implemented in the second year for which a sum of Rs.42,63,500 that is 16·20 per cent, Rs. 48,00,000 that is 18·23 per cent, Rs. 1,48,000 which is 0·55 per cent, Rs. 6,59,800 that is 2·51 per cent, Rs. 3 27,000 that is 1·24 per cent, Rs. 20,01,280 which is 7·60 per cent and Rs. 1,25,00,000 that is 47·48 per cent respectively of the total financial outlay of the second year have been specified for annual expenditure.

For the third year for various programmes like agriculture. horticulture. soil conservation, irrigation, forest, animal husbandry, health, education and communication, water-supply and sanitation a sum of Rs. 5,71,777 which is 2·10 per cent, a sum of Rs. 10,63,600 that is 3·92 per cent, Rs. 44,25,000 which is 16·29 per cent, Rs. 48,00,000 that is 17·67 per cent, Rs. 2,29,000 that is 0·84 per cent, Rs. 4,84,000 that is 1·78 per cent, Rs. 7,63,000 which is 2·81 per cent, Rs. 23,30,840 that is 8·58 per cent and Rs. 1,25,00,000 which is 46·01 per cent respectively have been specified for execution of various programmes specified. During this year maximum allotment has been earmarked for the last programme and as a whole the amount to be spent for all the programmes is more than other years.

Accordingly during the fourth year in different sectors a sum of Rs. 85,71,777 that is 2·64 per cent for agriculture, Rs. 4,33,600 that is 2·00 per cent on horticulture, Rs. 45,69,500 which is 21·07 per cent in implementing soil conservation programmes Rs. 48,00,000 that is 22·13 per cent for development of irrigation, Rs. 2.78,000 that is 1·28 per cent for forestry programmes, Rs. 4,49,800 which is 2·07 per cent for implementation of animal husbandry programme, Rs. 3,27,000 that is 1·51 per cent for health programmes, Rs. 22,58,490 that is 10·41 per cent for educational development and Rs. 80,00,000 which is 36·89 and highest per cent of the year earmarked for communication, water-supply and sanitation programmes respectively proposed in the financial outlay.

With regard to the total financial implication a sum of Rs. 23,10,998 which is 2·46 per cent of the total financial outlay has been earmarked for the agricultural activities. A sum of Rs. 41,24,400 that is 4·38 per cent of the total budget has been allotted for horticulture. Likewise, a sum of Rs. 1,72,48,000 which is 18·32 per cent of the total budget proposed for spending in soil conservation measures. For development of irrigation facilities in the area a sum of Rs. 1,92,00,000 that is 20·40 per cent would be required. Total amount as earmarked in the forest programme is Rs. 7,05,000 which is 0·75 per cent of the total financial outlay. With regard to educational development in the project area a sum of Rs. 77,32,150 which is 8·21 per cent of the total budget has been earmarked in the financial allocation. The programmes like communication, water-supply and sanitation need a sum of Rs. 3,96,00,000 that is 42·07 per cent of the total budget of the project.

FINANCIAL LEVER FOR DEVELOPMENT INTERVENTION

ABSTRACT

(Figures in Rupees)

Sl. No.	Name of the programme	1st year	2nd year	3rd year	4th year	Total	Remarks
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Agriculture ..	5,95,667 (3·15)	5,71,777 (2·16)	5,71,777 (2·10)	5,71,777 (2·64)	23,10,998 (2·46)	
2	Horticulture ..	15,73,600 (8·30)	10,53,600 (4·03)	10,63,600 (3·92)	4,33,600 (2·00)	41,24,400 (4·38)	
3	Soil Conservation ..	39,90,000 (21·06)	42,63,500 (16·20)	44,25,000 (16·29)	45,69,500 (21·07)	1,72,48,000 (18·32)	
4	Irrigation ..	48,00,000 (25·33)	48,00,000 (18·23)	48,00,000 (17·67)	48,00,000 (22·13)	1,92,00,000 (20.40)	
5	Forest ..	50,000 (0·26)	1,48,000 (0·55)	2,29,000 (0.84)	2,78,000 (1·28)	7,05,000 (0·75)	
6	Animal Husbandry ..	17,050 (0.09)	6.59,800 (2·51)	4,84,000 (1·78)	4,49,800 (2·07)	16,10,650 (1·71)	
7	Health ..	1,81,500 (0.95)	3,27,000 (1·24)	7,63,000 (2·81)	3,27,000 (1·51)	15,98,500 (1·70)	
8	Education ..	11,41,540 (6·03)	20,01,280 (7·60)	23,30,840 (8·58)	22,58,490 (10·41)	77,32,150 (8.21)	
9	Communication, Water-supply & sanitation.	66,00,000 (34·83)	1,25.00,000 (47·48)	1,25,00,000 (46·01)	80,00,000 (36·89)	3.96,00,000 (42·07)	
	Grand Total ..	1,89,49,357 (100%) (20·13)	2,63,24,957 (100%) (27·97)	2,71,67,217 (100%) (28·86)	2,16,88,167 (100%) (23·04)	9,41,29,698 (100%) (100%)	

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	A—Agriculture						
1	Rice Development Programme ..	54,400	54,400	54,400	54,400	2,17,600	..
2	Prevention of shifting cultivation	4,28,417	4,28,417	4,28,417	4,28,417	17,13,668	..
3	Training of farm families ..	18,360	18,360	18,360	18,360	73,440	..
4	(*a*) Distribution of agricultural implements.	18,400	18,400	18,400	18,400	73,600	..
	(*b*) Distribution of agricultural implements to landless and marginal farmers.	23,550	23,400	23,400	23,400	93,750	..
	(*c*) Availability of agriculture implements.	23,740	..	..	..	23,740	..
5	Village motivators ..	28,800	28,800	28,800	28,800	1,15,200	..
	Total ..	5,95,667	5,71,777	5,71,777	5,71,777	23,10,998	..
	B—Horticulture						
1	Vegetable demon s t r a t i o n @ Rs. 4,000 per H.	1,00,000	1,00,000	1,00,000	..	3,00,000	..
2	Short term fruit demonstration @ Rs. 15,000 H.	1,80,000	1,80,000	1,80,000	..	5,40,000	..
3	Mixed Orchard—						
	(*a*) Plantation @ Rs. 750 per H...	3,00,000	3,00,000	3,00,000	..	9,00,000	..
	(*b*) Bunding @ Rs. 250 per H. ..	1,00,000	1,00,000	1,00,000	..	3,00,000	..
	(*c*) Watching ..	..	..	..	50,000	50,000	50,000
	(*d*) Grafting ..	..	..	10,000	10,000	20,000	10,000
	(*e*) Training and maintenance of D. C.	1,00,000	1,00,000	1,00,000	1,00,000	4,00,000	40,000

(1)	(2)	(3)	(4)	(5)	(6)	(7)
4 Staff—						
(a) Junior Horticulturist @ Rs. 3,000 per month.	36,000	36,000	36,000	36,000	1,44,000	36,000
(b) Grafter (8) @ Rs. 2,000 per month.	1,92,000	1,92,000	1,92,000	1,92,000	7,68,000	1,92,000
(c) Deputation allowance @ Rs. 20.	45,600	45,600	45,600	45,600	1,82,400	45,600
5 Building—						
(a) Quarters for Jr. Horticulturist H.	1,00,000	..	..	..	1,00,000	
(b) Quarters for grafters H. ..	4,00,000	..	..	..	4,00,000	
(c) Training School (one) ..	20,000	..	..	..	20,000	
Total ..	15,73,60	100,53,600	10,63,600	4,33,600	41,24,400	3,73,600
C—Soil Conservation						
1 Lan d Development 80% labour, 20% material.	10,00,000 40,000	10,00,000 40,000	10,00,000 40,000	10,00,000 40,000	40,00,000 160,000	
2 ully control 50% labour ..	1,29,000 5,160	1,59,000 6,360	1,65,000 6,600	1,46,000 5,840	5,99,000 23,960	
3 Water harvesting structur 60% material, 40% labour.	20,34,000 8,360	20,82,000 83,280	21,30,000 85,200	21,78,000 87,120	84,24,000 3,36,960	
4 Stream bank erosion Control 50% labour 50% Material.	50,000 2.000	5,25,000 2,000	55,000 2,200	5,75,000 2,300	2,15,000 8,000	
5 Diversion bund 60% Lobour 20% material.	80,000 3,200	84,000 3,360	88,000 3,520	92,000 3,680	3,44,000 13,760	
6 Sisai Plantation, 66% Material 34% labour on original work 50% labour & 50% material in maintenance.	1,28,000 5,120	1,94,000 7,760	2,60,000 10,400	3,26,000 13,040	9,00 000 26,320	
7 Jhola land plantation 50% Labour 50% material.	51,000 2,040	64,000 2,540	67,000 2,680	70,000 2,800	2,72,000 10,080	

(1)	(2)	(3)	(4)	(5)	(6)	(7)
8. Miscellaneous Plantation 50% Labour	3,68,000	4,78,000	5,10,000	5,50,000	19,06,000	
50% Material.	14,720	19,120	20,400	22,000	76,240	
9. Conservation farming 30% materials	1,05,00	1,05,000	1,05,000	1.05,000	4,20.000	
70% labour.	4,200	4,200	4,200	4 200	16,800	
10. Liming of acid soils 20% Labour	30,000	30,000	30,000	30,000	1,20,000	
80% transportation & material cost.	1,200	1,200	1,200	1,200	4,800	
11. Training of farmer 30% labour, 70%	15,000	15,000	15,000	15,000	60,000	
materials.	600	600	600	600	2,400	
Sub-Total ..	39,90,000	42,63,500	44,25,000	45,69,500	1,72,48,000	
	159,600	1,70,549	1,77,000	1,82,780	6,89,920	
	(N. B —Labour Generation in mandays wage Rs. 25 per manday)					
D. Irrigation						
1. Construction of M. I. and L. I. projects to cater to the irrigation needs of 1600 hectares (821 families).	48,00,000	48,00,000	48,00,000	48,00,000	1,92,00,000	
Sub-Total . .	48,00,000	4.800,000	48,00.000	48,00,000	1,92,00,000	
E. Forest						
SALT						
1. No. of Demonstration plots to be set up.—						
(*a*) Cat. I Villages ..	..	5	5	5	T5	
(*b*) Cat. II Villages ..	..	5	5	5	15	
(*c*) Cat. III Villages ..	..	3	3	3	9	
2. Estimates of expenditure ..	50.000	1,48,000	2.29,000	2,78,000	7,05,000	
Sub-Total ..	50,000	1.48,000	2,29,000	2,78,000	7,05.000	

N. B.—(*a*) If 5,5,3 demonstration plots and 4,5,2 demonstration plots are undertaken from three categories of villages during 5th and 6th years respectively the total expenditure will rise to Rs. 15·07 lakhs.

(*b*) Subject to availability of funds the number of SALT demonstration plots can be increased proportionately to expedite completion of the Project.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	F—Animal Husbandry						
1	Two bicycles (one for L.I. and other for Attendant), kit-bags containing instruments incluing castrator, medicines etc. (N. R)	10,000	..	..	..	10,000	
2	Salary of the L.I. and Attendant for 3 months @ Rs. 1,600 for L. I. & @ Rs. 750 for Attendant per month. (Rec).	7,050	..	..	..	7,050	
3	Establishment of two Breeding Centres at Belghar and Guma cluster Hqrs. @ Rs. 32,500.	..	65,000	..	..	65,000	
4	Establishment of 9 Poultry Units (layer) in Kadapana, Madalkana and Burlubaru village @ Rs. 10,800 per unit.	..	97,200	..	..	97,200	
5	Establishment of 12 Duckery Units in Rajam, Pukur Colony, Rangaparu and Tuakala villages @ Rs. 4000 per unit.	..	48,000	..	..	48,000	
6	Providing 40 Piggery units in Dupli, Tidipadar, Guchuka, Kanibaru, Batipada., Gulimaska, Deogarh and Rajam villages @ Rs. 9,040 per unit.	..	3,61,600	..	..	3,61,600	
7	Recurring expenditure—						
	(a) Salary of 33 L. Is. and 3 Attendants	..	84,600	..	..	84,600	
	(b) Medicines for the mobile treatment unit and the breeding centres.	..	2,500	..	..	2,500	
	(c) Miscellaneous contingencies for mobile treatment unit and breeding-centres for cycle, lantern, kerosine, repair etc.	..	900	..	..	900	
8	Providing 9 Dairy Units in Rangaparu, Burlubaru and Dupi village @ Rs. 14,700 per unit.	..	..	1,32,300	..	1,32,300	

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
9	Providing 6 poultry units (layer) in Deogada and Guchuka villages @ Rs. 10,800 per unit.	..	..	64,800	..	64,800	
10	Providing 9 poultry units (broiler) in Tidipadar, Dupi and Burlubaru villages @ Rs. 22,100 per unit.	..	..	1,98,900	..	1,98,900	
11	Recurring expenditure—	..	..	84,600	..	84,600	
	(*a*) Salary of 3 L. Is. and 3 Attendants.						
	(*b*) Medicines for the mobile treatment unit and two breeding centres.	..	..	2,500	..	2,500	
	(*c*) Miscellenous contingencies	..	—	900	..	900	
12	Providing 6 dairy units in Pukur Colony and Guchuka @ Rs. 14,700 per unit.	..	..	..	88,200	88,200	
13	Providing non-recurring for piggery and equipment to 40 families @ Rs. 1,000 + feed for one year 5,840 × 40.	..	..	..	2,73,600	2,73,600	
14	Recurring expenditure.						
	(*a*) Salary of 3 L. Is. and 3 Attendants.	..	..	..	84,600	84,600	
	(*b*) Medicines for the Mobile Treatment unit and 2 Breeding Centres.	..	..	..	2,500	2,500	
	(*c*) Misc. contingencies	..	..	..	900	900	
	Sub-Total ..	17,050	6,59,800	4,84,000	4,49,800	16,10,650	

	G—Health					
1	Health Education material ..	37,000	..	.	—	37,000
2	Creation of 2 posts of staff nurse ..	36,000	..	..	..	36,000
3	Creation of 1 post of female sweeper	1,500	..	..	..	1,500
4	T. B. camp for P.O.L. ..	6,000	..	..	..	6,000
5	Mother training camp ..	1,000	..	..	..	1,000
6	Special repair to Belghar Hospital ..	1,00,000	..	..	..	1,00,000
7	Construction of staff quarters for additional staff (50%).	..	2,00,000	..	..	2,00,000
8	Creation of post of Paediatric Specialist.	...	36,000	..	..	36,000
9	Creation of 2 male and 2 female Health Workers.	..	36,000	..	..	36,000
10	T. B. Camp, mother training camp, etc. to continue and other schemes of 1st year to continue.	..	55,000	..	..	55,000
11	Completion of rest 50% of additional staff quarters.	..	..	2,00,000	..	2,00,000
12	Creation of 2 posts of male & female health worker each.	...	..	36,000	..	36,000
13	Construction of low cost houses for the male & female additional health workers.	..	..	4,00,000	..	4.00,000
14	Continuance of previous year schemes.	..	..	1,27,000	..	1,27,000
15	Completion of all construction work	..	..	..	1,00,000	1,00,000
16	Sub-centre building at Belghar (if Health Department does not provide).	..	..	..	1,00,000	1,00,000
17	Others to continue ..	..	..	..	1,27,000	1,27,000
	Sub-Total ..	1,81,500	3,27,000	7,63,000	3,27,000	15,98,500

Sl. No.	Name of the programms	1st year	2nd year	3rd year	4th year	Total	Remarks
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	H—Education						
1	One audio-visual unit with a generator 16 m.m. project with a specially designed 4 wheeler tralley rickshaw.	90,000	..	..	..	90,000	
2	Construction of 2 low cost hostel buildings at Susabhata and Germalu Primary Schools.	3,00,000	...	..	...	3,00,000	
3	Construction of two new Primary School buildings at Rajam and Ushabali with furnitures, etc.	1,30,000	..	..	..	1,30,000	
4	Construction of one extension school building at Kadapana with furniture and equipment.	60,000	...	..	...	60,000	
5	Construction of one M. E. School building with low cost hostel at Bilamal with furnitures, etc.	2,70,000	..	..	...	2,70,000	
6	Recurring expenditures ..	2,91,540	...	..	..	2,91,540	
7	Construction of two low cost hostel buildings at Bikapanga and Dharanimaska.	..	3,00,000	...	..	3,00,000	
8	Construction of two new Primary School buildings with hostel building, furniture, etc.	...	4,80,000	..	..	4,80,000	
9	Construction of one extension school building including furniture and equipment at Saperibhata.	..	60,000	..	..	60,000	

10	Construction of one M. E. School building along with hostel building, furniture, equipment at Kanibara.	..	2,70,000	..	..	2,70,000
11	Recurring expenditures ..	..	8,91,280	..	..	8,91,280
12	Construction of two Primary School buidlings with hostel building, furniture, etc., at Sadangi and Kranjikana.	..	..	4,80,000	..	4,80,000
13	Construction of one extension school building at Karanja with furnitures.	..	..	60,000	..	60,000
14	Construction of one M. E. School building at Batipada with hostel and furnitures, etc.	..	..	2,70,000	..	2,70,000
15	Establishment of 4 J.S.N. at Balipada, Belghar, Bilamal and Dhumamaska.	..	..	30,000	..	30,000
16	Recurring expenditure	..	..	14,90,840	..	14,90,840
17	Construction of M. E. School building at Rangaparu with hostel building, furnitures, etc.	..	..	..	2,70,000	2,70,000
18	Establishment of 4 J. S. N. at Germali, Guchuka, Gumma and Kanibara.	..	..	..	30,000	30,000
19	Recurring expenditure	..	..	..	19,58,490	19,58,490
	Sub-Total ..	11,41,540	20,01,280	23,30,840	22,58,490	77,32,150

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
I—Communication, Water-supply-and Sanitation.							
1	Communication ..	50,00,000	1,00,00,000	1,00,00,000	60,00,000	3,10,00,000	
	Mandays created ..	30,000	50,000	50,000	30,000	1,60,000	
2	Water-supply—						
	(*a*) Construction of 22 Nos. of new tube wells @ Rs. 50,000 TW.	..	..	..	..	11,00,000	
	(*b*) Replacement of 7 Nos. defunct tube-wells @ Rs. 50,000 TW.	..	..	..	..	3,50,000	
	(*c*) 2 Nos. S. G. pipe water-supply @ Rs. 800 *per capita* for prospective population of 2,021—4,320.	..	..	..	..	34,00,000	
3	Sanitation—						
	(*a*) Construction of 1766 Sulav type latrines @ Rs. 2,000 per latrine.	..	..	..	..	36,00,000	
	(*b*) Total of water-supply and sanitation.	16,00,000	25,00,000	25,00,000	20,00,000	84,50,000 or 86,00,000	
	(*c*) Mandays created ..	8,000	12,000	12,500	10,000	43,000	
	(*d*) Sub-total ..	66,00,000	1,25,00,000	1,25,00,000	80,00,000	3,96,00,000	
	(*e*) Mandays created ..	38,000	62,500	62,500	40,000	2,03,000	
	Grand-Total ..	1,89,49,357	2,63,24,957	2,71,67,217	2,16,88,167	9,41,29,698	

5·4. CONCLUDING SUGGESTIONS

5·4·1. *Forest*—Introdction of Agro-forestry practices, commonly known as SALT (sloping Agricultural Land Technology) has been recommended for the project area.

(*a*) SALT—1. Technology may be applied to the lands with gentle slopes where agriculture can be practised for increasing crop yield and reducing soil erosion.

(*b*) SALT—2. Technology otherwise known as Simple Agro-Livestock Technology may be applied on uplands and hill-slopes, for minimising soil erosion, improving soil fertility and providing a regular decent income to the family.

(*c*) SALT—3. It is a sustainable Agro-forest land technology which may be adopted in steep slopes where the tribals practise Podu, in the absence of any other alternative.

Soil Conservation—(*a*) Since land is scarce in the area, waste lands may be developed by ways of bunding and levelling.

(*b*) As the area is infested with gullies, it is necessary to stabilise these gullies.

(*c*) New water harvesting structures may be constructed and old ones be properly maintained.

(*d*) Vulnerable stream banks may be treated in order to prevent bank cutting by run off during flood. Vulnerable spots below the foot-hills may also be provided with diversion bund for safe discharge of run offs from the hills.

(*e*) The existing sisal plantation may be handed over to the beneficiaries for extraction of fibre and more areas should be covered under such plantations.

(*f*) Non-protected Jhola land should be protected with suitable soil conservation measures.

(*g*) In order to avoid conventional farming system it is proposed to demonstrate conservation farming technology to the farmers on their land.

(*h*) There is a need for application of lime suldge over the acidic soil for a period of four years which may be procured from J. K. Paper Mills, Rayagada.

(*i*) For actual execution of different conservation measures, farmers may be imparted with necessary training.

(*j*) Office building, godown and staff quarters may be consttucted at Belghar for ensuring better execution.

Agriculture—(*a*) Since Kutia Kandha farmers practise primitive agriculture, it is necessary that they should be trained in recent techniques of crop production in order to attract them towards settled cultivation and thereby to make them self sufficient in different crops.

(*b*) Demonstration on rice crops should be conducted in all the 68 Kutia Kandha villages of the agency at the rate of atleast one in each village, so that they can be acquainted with the latest scientific know-how about rice crop.

(*c*) The Podu cultivators may be rehabilitated by providing them input assistance for growing different crops in the lands avilable for the purpose in regular manner in a better and scientific way.

(*d*) A set of agricultural implements should be provided to the landless families and families having land up to 1 acre for doing cultivation in their home-stead land. It is also proposed to give one mould brand plough with handles to each land holder.

(*e*) Literate, well informed and Kutia language knowing young persons may be posted to take up agricultural development work in the area after giving them proper training by agricultural staff.

(*f*) The Special Officer, K.K.D.A. may see the administrative side and personnels of Agriculture Department in the area may look into the technical aspects of growing various crops through the agriculture officer in the area in consultation with the Agency authority may take up the detailed cropping programme.

Horticulture—(*a*) Necessary arrangements may be made to establish new orchards

(*b*) Grazing of cattles should be confined to 'gochar' and other lands not covered under crops.

(*c*) The village co-operatives have to be organised quickly and these have to be entrusted with the responsibility of marketing of fruits and vegetables produced in the area along with their other functions of input supply, credit provision, etc.

(*d*) Contact man may be appointed to advise the farmers in the area regarding horticultural plantation.

(*e*) For weaning away the farmers from podu cultivation the productivity of land has to be increased and land from Revenue Department (Abad-jogya-anabadi) and proposed reserve forest have to be released to provide at the rate of 3 hectares for each landless family of which one hectare may be in the plain area.

(*f*) Available labour in the area should be fully utilised in unskilled work like earth work in field bunding, water harvesting structure, free planting, road making, etc. so that additional income from these sources will supplement their income from farming and sustain them in the initial years.

(*g*) For improving the condition of the farmers in the area, provision of irrigation facilities, use of improved seeds, pesticides and fertilisers which will result in increasing the per hectare yield are a must.

(*h*) Attempts should be made to educate the Kutias to use vegetable curry.

(*i*) The sisters of Navajivan Mandal who are teaching Kutia people to prepare curry should be encouraged to go ahead with the work.

(*j*) Demonstration on vegetable and spices cultivation may be distributed over all the villages in Kharif and Rabi seasons and closely supervised by the Grafters to be posted in the area.

(*k*) The success of the fruit plantation scheme will depend on successful transformation of collective ownerships which is the characteristic of the tribal land tenure system into private ownership and well managed marketing organisation free from all kinds of exploitive elements.

(*l*) Short term fruit plantation with papaya and plantain first and pine apple next may be added to the plantation programme. Demonstration on short term fruits may be conducted in order to encourage the farmers to put additional area under such fruits at their own cost.

(*m*) Each farmer can take up cultivation in an area of about 2 hectares of which one hectare can be put under different fruit trees while the entire area can be put under their normal podu land crop.

(*n*) After orchards are fully established the land has to be finally allotted with full ownership right to the farmers concerned for whom this will be an added attraction. This may be made clear to the Kutias from the beginning to ensure their complete involvement in the orchard establishment.

Irrigation—(*a*) The M. I. P. seem to be feasible in the area but adequate cultivated lands are not available with the Kutia Kandhas. So some forest lands may be reclaimed and provided to the tribal people first to get benefit from the irrigation water.

(*b*) The programme of construction of water harvesting structures prepared by the I.T.D.A., Baliguda should be thoroughly investigated into. The ayacut of the existing water harvesting structures (said to be providing irrigation to 60 hectares of land) may also be verified as per the Irrigation Act for Khariff and Rabi seasons separately.

(*c*) Construction of M. I. Ps. or small water harvesting structures L. I. points (after provision of electricity) in the area may be thought of if found feasible on proper investigation of the scheme. The Chief Engineer, M. I. may furnish the list of M. I. Ps. with necessary details feasible in K. K. D. A. area.

Animal Husbandry—(*a*) In considering the socio-religious customs and animal rearing habits of the Kutia Kandhas, it is worthwhile to extend beneficiary-oriented schemes under animal husbandry sector to the landless and marginal farmers of the tribe.

(*b*) A mobile treatment-*cum*-motivation unit may be introduced initially in order to propagate the schemes on animal husbandry to render door step health services to the livestock.

(*c*) Two cross bred jersy bull centres may be located in the area for upgrading the local cattles. Each centre should be equipped with one Livestock Inspector and one Contingent Attendant.

(*d*) The dairy scheme may be introduced in a limited number of villages of Kutia Kandha project area on an experimental basis.

(*e*) A study should be made by the Animal Husbandry Department to determine the nutritive value of the forest fodder such as tree leaves, grass and shrubs.

(*f*) Feed and fodder production, training of farmers for better practices and increased health care services will help in increasing the productivity of local cattle.

(*g*) When road communication is made and electricity is supplied, the natural breeding programme may be replaced by artificial insemination preferably with frozen semen technology.

(*h*) Top tree feed species can be grown in the homestead land premises as green hedges and in the waste lands of the village yield adequate nutritive fodder for the livestock.

(*i*) There is a need for reorientation of the scheme 'distribution of cross-bread piglets' with necessary modifications in respect of provision of feed for one year free of cost. With improved breeding, sanitary housing and proper feeding, pigs can be a source of much greater profit to their owners. The old scheme of giving three sows and one exotic cross-breed boar free of cost as one unit to the beneficiary family under the condition that he could return the same number of piglets within 18 months is to be revived.

(*j*) Poultry and ducks are the most popular and profitable livestock after cattle. Therefore, extensive poultry training programme coupled with adequate and easy availability of institutional credit has to be arranged

under the project programme for the intending poultry farmers. However, the schemes for layer poultry farm and broiler poultry farm are proposed to be taken up from 1993-94 and 1994-95 respectively when electricity is expected to be supplied and other facilities are likely to be made available.

(*k*) Initially duck rearing may be started in the villages having natural water sources which is highly economic. There is a need for continuance of feed supply beyond the initial age of production of in view of the extreme poverty of the Kutia Kandha people. It should continue for atleast one year during the production period.

Health —(*a*) The staff position of Belghar Hospital needs to be augmented and thehospital building and staff quarters need major repair.

(*b*) Since malaria fever is the main cause of mortality and morbidity, control of malaria in the region requires top priority. Use of mosquito nets should be encouraged, antimalarial drug distribution should be started, all schools where a teacher is available can be declared as F. T. D. or D. D. C. and active and positive survillance may be activated by increasing the number of sub-centres.

(*c*) Skin diseases like scabies, ring worm and other dematological additions from which about 20 per cent of population suffer can be controlled by informing and educating the people through health education.

(*d*) Diarrhoea and infantile diarrhoea are preventable. Use of O. R. S. may be encouraged. Mothers and grand mothers are to be trained in its use by holding discussions, group meetings etc.

(*e*) The district tuberculosis officer, Phulbani can arrange camps for detection of T. B. cases with the help of local health staff by giving adequate publicity before hand.

(*f*) The technical staff available need be activated to help in the matter of detection and eradication of leprosy.

(*g*) The sanitary wells which are not really sanitary in nature need be provided with a raised platform, drain and a hand pump. While providing tube-wells one villager or some voluntary worker may be trained for every 3 to 4 villages who can attend to minor defects. The villages where tube-well could not be Installed as rig could not ply to those villages may be provided with sanitary wells with hand pumps fixed.

(*h*) Immunisation and maternal services may be intensified by frequent antenatal, intranatal and postnatal visit by the female multipurpose workers. The post of the worker should not fall vacant.

(*i*) Health education can be taken up with proper material and method. A change in the attitude of the Kutia Kandha can be made slowly by witting with them, listening to their deliberation, learning from their ideas and experiences, discussing with them and lastly using the technical knowledge.

(i) The simple rule of providing one sub-centre to each 3,500 persons in tribal region should not be applied here. The region requires special considera-tion.

Public Heath and Sanitation—(*a*) Water-supply which is the preventive side of the health should be taken well care of ratner than to spend much on the curative side. In K.K.D.A. area many villages have so far been left out to be covered under drinking water facilities mainly due to inaccessibility of the area.

(*b*) Through it is difficult to plan ont for provision of pipe water-supply for small and scattered villages, it is possible to provide two model water-supply system in the headquarters of two Grama Panchayats even though these two villages do not confirm to the parameter of pipe water supply project.

(*c*) The smaller villages with less than 100 population may be provided with one tube-well each while the bigger ones with more than 100 population may be supplied with 2 tube-wells each. Regular physical and chemical tests of tube-well water may be conducted and action taken by P. H. E. Department if there is any defect in water quality.

(*d*) The Kutias who lack personal hygiene may be imparted training on personal health care through Video film so that many diseases will be reduced in the area.

(*e*) Sulav type latrines may be provided to all Kutia Kandha families in the area.

(*f*) There is necessity of drawing electric line and installing a transformer in the area under electrification programme.

(*g*) Similar to town planning a village planning unit should be created and its architecture may suggest size, configuration and ventilation, etc,, of the houses. Disaries may be trained in masoon work so that they can be able to change the idea of house concept.

Communication—(*a*) The communication facility in the area is in a bad shape with only half of the road length conforming to some kind of road specification. Even the main road connecting Belghar with Tumudibandh is also a fair weather one.

(*b*) It is roughly estimated that at least 30 Kms. of new roads will be required to connect about 20 villages having no communication facilities with Belghar.

(*c*) The road work should not be left either to K. K. D. A. authority or to the Panchayat to handle since they do not have necessary technical personnels. It should be entrusted to R. D. Department. However, the progress of work may be monitored by the Special Officer, K. K. D. A., Belghar.

(*d*) To carry out the programme a post of Executive Engineer may be created under R. D. Department with 2 A. Es with their headquarters at Tumudi-bandh and Belghar, respectively.

Education—(*a*) Since there has been a total neglect of adult education particularly in case of women, adequate emphasis should be laid on motivation of women and special programmes may be developed for women folk for quicker achievement.

(*b*) It is necessary for the tribal children to be oriented in school going practices before they are actually required to attend schools. The pre-primary education along with the feeding arrangement would be attractive and sustaining. In 30 small villages where it is not possible to run Anganwadi

centres, some compensatory pre-school programme should be arranged for the children. The Anganwadis should adopt the 'Seva Bharati' programme of pre-primary education along with other programmes as it is not possible to establish a net-work of 'Seva Bharati' due to financial constraint.

(*c*) School buildings may be constructed early in order to carry on the school activities regularly. If there is school building, the teacher might use the building both for his residential accommodation and also for the school.

(*d*) The Special Officer, K. K. D. A., Belghar can play an important role in checking teacher absenteeism. The services of the S. I. of Schools, Belghar should be placed at the disposal of the Special Officer.

(*e*) Arrangements may be made for disbursement of the salary of teachers at Belghar which would prevent closure of schools for two days every month.

(*f*) Mid-day meal facility should be extended to all the Primary and Middle Schools of the project area as it serves as good incentives for enrolment, retention and regularity in attendance.

(*g*) The management of both the Residential Sevashram and Government High School, Belghar should be amalgamated for better standard of education and in favour of integrated administration.

(*h*) A teacher-pupil ratio of 1:25 may be fixed for tribal children with provision of one more teacher in order to enable the teacher to take personal care of the progress of studies of individual children.

(*i*) The teachers of Residential school should have tried for admission of more Kutia Kandha children in preference to others. The percentage of attendance which is very low should be enhanced.

(*j*) The basic minimum requirement of furnitures and other necessities such as maps, charts, science apparatus etc. have to be provided to the school.

(*k*) In Gumma Ashram School of M. E. standard suitable buildings for kitchen, dining and living should be provided, attendance position should be improved, preference should be given to primitive tribe children in admission by reserving a quota for them, teachers should be entrusted with the responsibility of motivating the Kutia Kandha people for admitting their children in the school and frequent academic supervision should be undertaken.

(*l*) In Government High School, Belghar deficiency in building position should be removed, a compound wall may be provided. The attendance position particularly the inter-class variation may be investigated into and taken care of. priority should be gtven to S. T. in general and Kutia Kandha in particular for admission, the cause of drop-out should be investigated. Teachers should take more interest in continued development of learning under class room situations for better results. Since apparatus, maps, charts, models etc. may be provided and other problems such as poor enrolment of girls, inadequacy of reading and writing materials, stipend, health hazards etc. should be removed.

(*m*) Educational development of Kutia Kandha should be considered a responsibility of the Kutia Kandha Development Agency, Belghar which has not yet been done on the ground that education comes under State sector responsibility.

(*n*) The community leadership should be the focal point and chief help for spread of education in the Kutia Kandha villages. The youth organisations can provide substantial assistance in executing the educational programmes but utmost care has to be taken to see that their traditions should be the base for building up the structure of the programme designed to be introduced particularly in adult and elementary education.

(*o*) The cluster approach which is an attempt to make execution units smaller so as to ensure better work of the functionaries should be adopted.

(*p*) In order to overcome the problem of living and social security of functionaries, it is proposed to construct barracks with 8 to 10 spacious rooms, each room being an independent unit with a kitchen space at the rear verandah.

5·5. A WORD FOR DEVELOPMENT PRACTITIONERS

Any development intervention would stress on three significant aspects—planning, implementation and evaluation. The development administration has the chief concern for effective implementation of development programmes as envisaged by the policy makers and planners. The principal props of development administration constitute the development practitioners of various categories, of different grades arranged in heirarchy of rank and status in tune with responsibilities. The successful implementation of development programes pre-eminently depend upon the sincerity of efforts of 'development practitioners' or 'developers' as they are to translate the norms and conditions of plans among the people in any area. The development practitioners, especially at the grass-root level, while interacting with people are expected to discharge their duties in such a manner so that the intended beneficiaries realise the purpose of activities for their development. Often it is noticed that the development practitioners, who feel superior in ability, experience and work, think intended beneficiaries to be ignorant of various activities and such an attitude is not desirable.

While implementing any development programme the intended beneficiaries are to be taken into confidence, so that the local initiative is catalyzed, in the contextual framework of human resources development. At times, putting more emphasis on economic aspect and less on socio-structural and institutional aspects results in total failure of a project of the success may be low or insignificant. Therefore, it is imperative that the development Practitioner is ought to visualies the entire situation, create a congenial atmosphere, utilise the available resources, inclusive of human resources, and skill of people in order to go ahead with the programme. The relationship between intended beneficiaries and development practitioners should be complementary rather than contradictionary.

The opportunity of taking due advantage of traditional institutional arrangements, decision to act on certain reasoning, a carry-over of enthusiasm from one situation to the other etc. are some of the important techniques which may help the development practitioner for motivating the tribal people in the process of development. Several traditional institutions and behavioural patterns will lead to successful achievements with due weightage to their community ethos. The native system of authority, power, and human ideologies and values, cultural ethos and social network are to be taken into account by the development practitioner to ensure the co-operation and involvement of the people. Social and personal qualification, the prestige rating, social connections of the development practitioner are some significant considerations. He should seek unanimous group decision, secure spontaneous commitments and make compromise with the people for whom he intends to work. One must try to resolve conflicts and promote co-operation before inducing innovative traits in the development programmes. Quick and unimaginative actions invite danger, hence one should learn from the people and apply for their benefit. The development practitioner is expected to explore appropriate stategies for sustainable socio-economic development by overcoming the barriers. It would be most desirable to convert hostility of the people in order to make constructive use of their energy, ability and intelligence.

The development practitioners with their co-ordinated efforts shall assume responsibility in taking decision for people's development. The development practitioner who plays the vital role in co-ordination and control shall be a person with vision, outlook and ambition. Decisive actions to get rid of the problems of the people should be initiated without delay and diversion, otherwise it may create unhealthy attitude and give set back to the ongoing development programmes. Before embarking upon any inovaative programme the developer has to establish adequate support with the people and gain people's support. Pragmatic approach of a development practitioner and his insight into the community's real situations can sort out major problems on the spot without giving any scope for recurrence. However, confidence in the people, confidence in himself and confidence in his approach will bring success in goal attainment. The development practitioners as key persons have to work with team spirit so that join-handed efforts are ensured.

In the present study, the Kutia Kandhas although represent pre-literate, pre-industrial and pre-farming community, they have been surviving since long through their own indigenous technology within the eco-cultural net work. The wave length of communication between the Kutia Kandha and the development practitioners are not the same, but with necessary efforts the hiatus is certainly likely to be bridged.

SELECTED BIBLIOGRAPHY

1. Ali, Almas	1978-79	"Health and Genetic Problems of Kutia Kandhas of Burlubaru village" ADIBASI, Vol. XVIII., Nos. 1—4, pp. 56—62.
2. Bailey, F. G.	.. 1985	Caste and Economic Frontier, London, Oxford University Press.
3. Behura, N. K. and B. N. Sinha.	1970-71	"Mutha, the Traditional Political Organisation of the Kandha, ADIBASI, Vol. XII, Nos. 1—4, pp. 13—21.
4. Boal, Barbara M.	.. 1984	The Kandhas (Human Sacrifice and Religious Change), Modern Book Depot, Bhubaneswar.
5. Boal, Barbara M., Nayak, R. K. and Nabor Soren.	1990	A Handbook for Development, Indian Social Institute, New Delhi.
6. Cambell, J.	.. 1964	Amongst the Wild Tribes of Kondistan, Hust and Blaokt, Vol. IX.
7. Cerenea, Michael, M (ed.)	.. 1985	Putting People First, Oxford University Press.
8. Dalton, E. T.	.. 1872	Descriptive Ethnology of Bengal, Calcutta, Superientendent of Government Printing.
9. Mahapatra, S. K.	.. 1986	Modernisation and Ritual Identity and Changing Santal Society.
10. Nanda, A. R.	. 1982	Census of India, 1981, District Census Handbook, Phulbani district, Part XIII-B, Directorate of Census Operations, Orissa.
11. Patel, Tara	— 1984	Development of Education among Tribal Women, Mital Publication, Delhi.
12. Patnaik, N. and P. S. Das Patnaik.	1982	The Kondh of Orissa, T. H. R. T. I., Bhubaneswar.
13. Pattnaik, U. N.	.. 1964-65	Reminiscences of an Administrative Officer in the Kondha Hills "ADIBASI", Vol. XI (1969-70), No. 4.
14. Russel, R. V.	.. 1975	Tribes and Castes of Central Provinces of India, Vol. XIII, Part-III (Reprint).
15. Sable, Alan	.. 1977	Education in Orissa A Study in Solution and Alteration Process.

16. Sahu, Dibakar .. 1990 Land Forms, Hydrology and Sedimentation, Naya Prakash, Calcutta.

17. Ibid .. 1987 Soil Conservation and Remote Sensing, Roopanand Publishers, Bhubaneswar.

18. Senapati, Nilamani .. 1983 Orissa District Gazetteers, Boudh Khondamals, Revenue Department, Government of Orissa.

19. Shah, Ghansyam and others 1985 Tribal Education in Gujrat, Ajanta Publication, Delhi.

20. Tellis Nayak, Jessil, B. .. 1982 Education and Income Generation for Women : A non-formal approach, New Delhi, Indian Social Institute.

21. Winfield, W. W. .. 1928 A Grammar of the Kui Language, Calcutta, Asiatic Society of Bengal.

22. Ibid .. 1929 A Vocabulary of the Kui Language Kui-English, Calcutta, the Asiatic Society of Bengal.

23. Tripathy, B. .. 1972 Census, 1971, District Census Handbook, Boudh-Khondmals district, Part X-A and Part X-B, Directorate of Census Operation, Orissa.

24. District Statistical Office, Phulbani 1989 District Statistical Handbook, 1989-90, District Statistical Office, Phulbani.

25. Government of India, Planning Commission. 1984 Report of the Working Group on Tribal Development during Seventh Plan, 1985—90.

26. Government of India, Ministry of Welfare. 1989 Report of the Working Group on Development and Welfare of Scheduled Tribes during Eighth Five-Year Plan, 1990—95.

27. K. K. D. A. .. 1980 & 1990 Action Plan for the Kutia Konch Development Agency, Belghar in Phulbani district (Unpublished)

28. Balliguda I. T. D. A. .. 1990 Podu Prevention Schemes

OGP—MP-XII (T. W.) 13—500—2-11-1995